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From the Editor's Desk

Scott Barrie from Barrita Orchids showcases another batch of seedlings from their commercial nursery on the Central Coast of New South Wales. They have the obvious benefit and advantage of being able to grow on vast numbers of seedlings to blooming to select for the specific hybridising traits hoped for at pollination time. Along the way you also get some quite unexpected results, plus some obvious dominant and recessive traits. There is more to hybridisation than just slapping two different flowers that happen to be in bloom on a given day.

Norm and Val Shipway took out the major prizes at the recent National Cymbidium Extravaganza at Dural, NSW. Their plant of *Cymbidium* (Last Tango x Little Rod) 'Tobruk' was Grand Champion and a very eyecatching flower and display, with four flower stems with up to 40 blooms on the inflorescence. I'm sure this will become a sought after plant for show or just for growing, once divisions or mericlones become available.

I often wish that Andy Easton, now living in Colombia, would write more articles on orchids and their breeding, than some of the more controversial stuff he often ignites. I've known Andy since I was a teenager and he has always been generous in his orchid information sharing. We have never had a cross word, maybe because I've never been in competition with his Cymbidiums! In this issue Andy gives us the latest on *Odontoglossum* and their hybrids, with some gorgeous images.

Sadly we record the passing of two gentlemen who were both orchid judges heavily involved with our native orchids. Jim Lykos passed on 27th August 2019 aged 71. Jim was a senior judge with ANOS and was the resident expert on terrestrial orchids and overall plants of the upper Blue Mountains. Murray Corrigan had been an orchid grower for over 60 years, and with the likes of the late Wal Upton, involved with the formation of the Australasian Native Orchid Society in 1963. Murray also joined the North Shore Orchid Society back in 1961. Many growers would be familiar with *Dendrobium kingianum* 'Corrigan's Red'. Murray left us at 88 years of age on 29th September 2019. Our sincere condolences to the extended families of both gentlemen.

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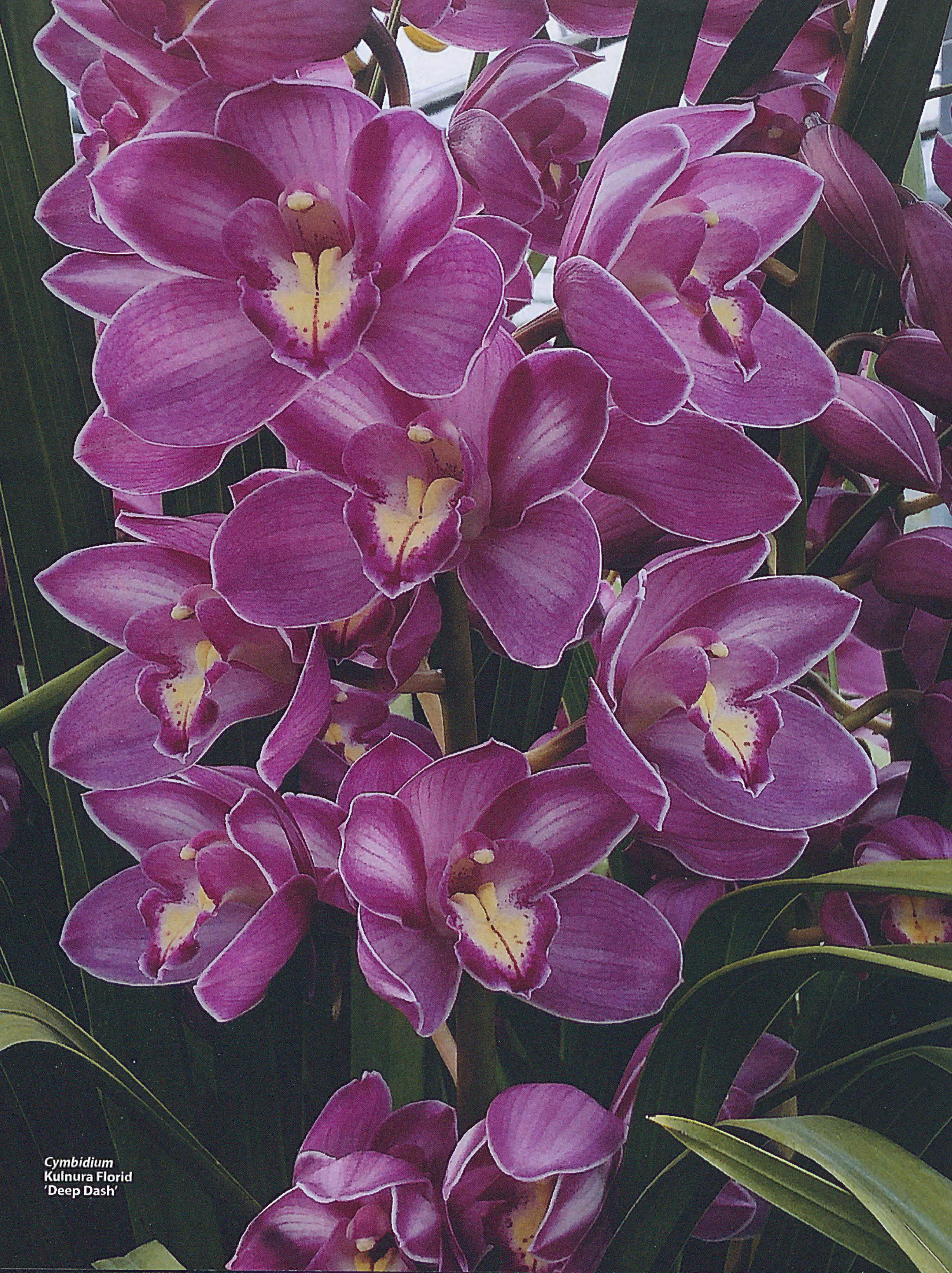
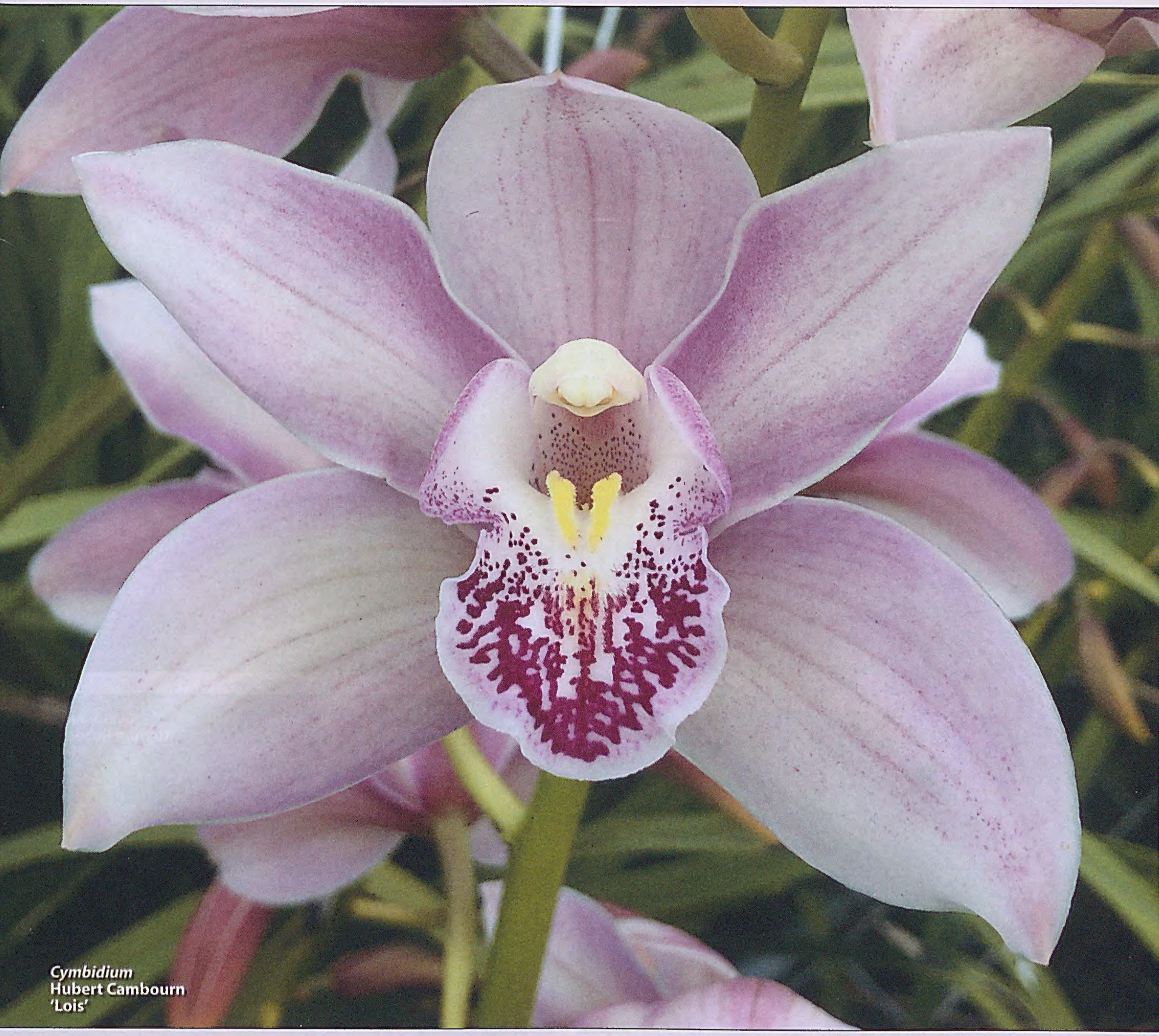
Cover Shot

***Cymbidium* (Last Tango x Little Rod) 'Tobruk'**
- Grand Champion at the 2019 National Orchid Extravaganza. Grown by Norm & Val Shipway. *Photo: D.P.Banks.*



***Cymbidium*
Kulnura Florid
'Deep Dash'**



Cymbidium Hubert Cambourn 'Lois'

New Barrita Winter-Spring Cymbidiums 2019

Text and photos by Scott Barrie

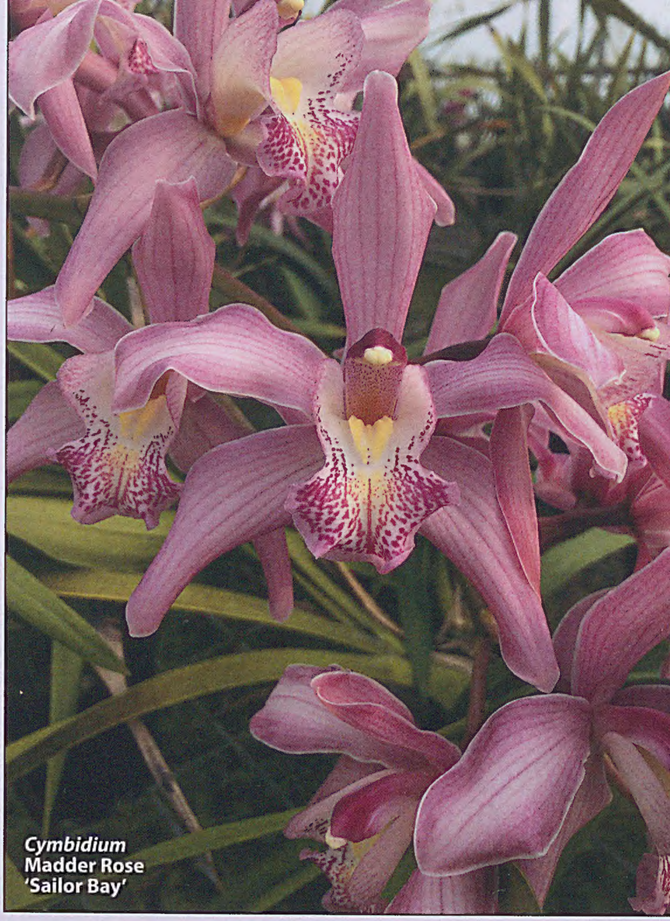
August and September has traditionally been peak flowering time for Cymbidiums. However, in our nursery, this peak has moved back further into winter. There are a few reasons for this, one being a mix of oldie parents and new offspring.

I find it interesting to look at flowers and compare them with their parents. It's enjoyable to cross traditionally good parents with our modern lines to see which traits come through and how powerfully each parent influences the offspring.

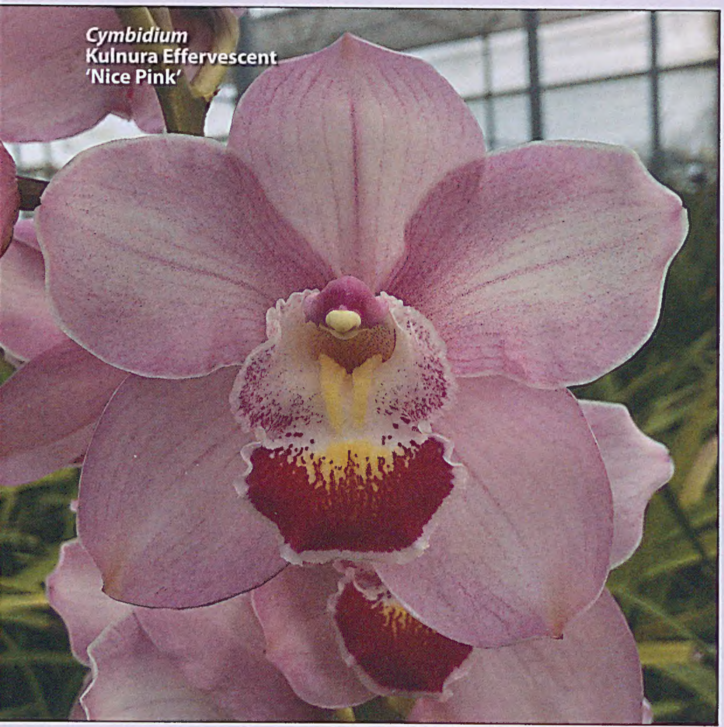
Here is a few of what's in flower in the nursery at the junction of winter and spring.

We've grown *C.* Hubert Cambourn 'Lois' for more than 30 years. It's an oldie but a reliable flowerer for mid spring. The parents of this triploid are *C.* Alexanderi x *C.* Madder Rose. Triploids are generally the infertile 3N form of *Cymbidium*, both stronger growers and more productive than diploids and tetraploids.

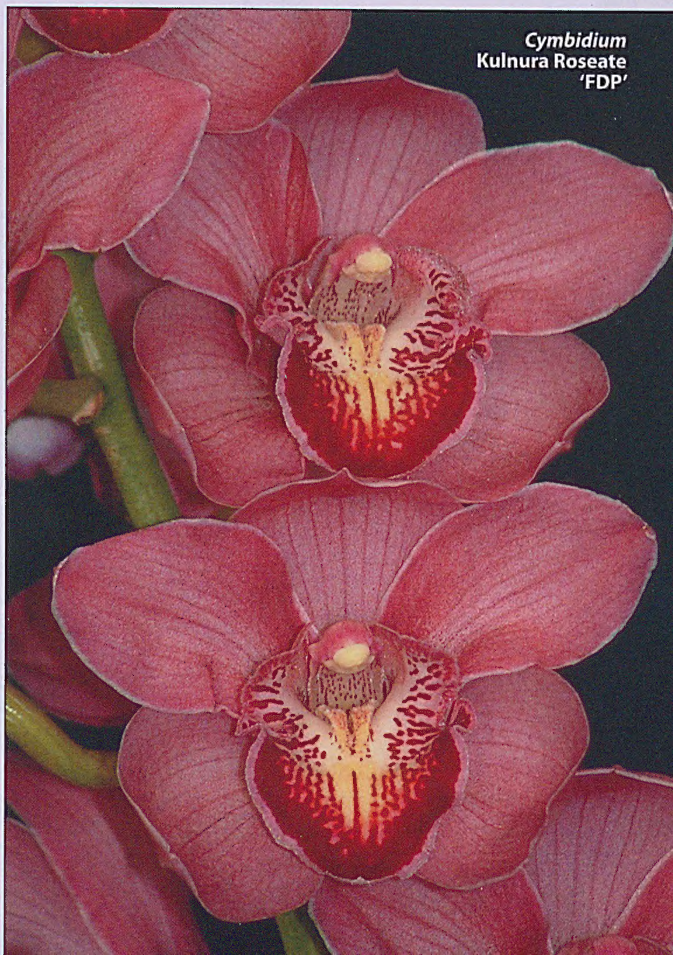
Orchid evaluation can be based on a few different ideals, being commercialism, generational improvement or perceived standard of perfection. When we came across a plant of *C.* Madder Rose 'Sailor Bay', we decided to make some hybrids with it. In combination with *C.* Kulnura Roseate 'FDP' makes *C.* Kulnura Effervescent. The cultivar *C.* Kulnura Effervescent 'Nice Pink', whilst being a beautiful flower and a good commercial producer, must surely be one of the best examples of improvement over its parent. Look at the form of *C.* Madder Rose, so wild and untamed. To produce a flower of such quality is quite fantastic.



Cymbidium
Madder Rose
'Sailor Bay'



Cymbidium
Kulnura Effervescent
'Nice Pink'



Cymbidium
Kulnura Roseate
'FDP'

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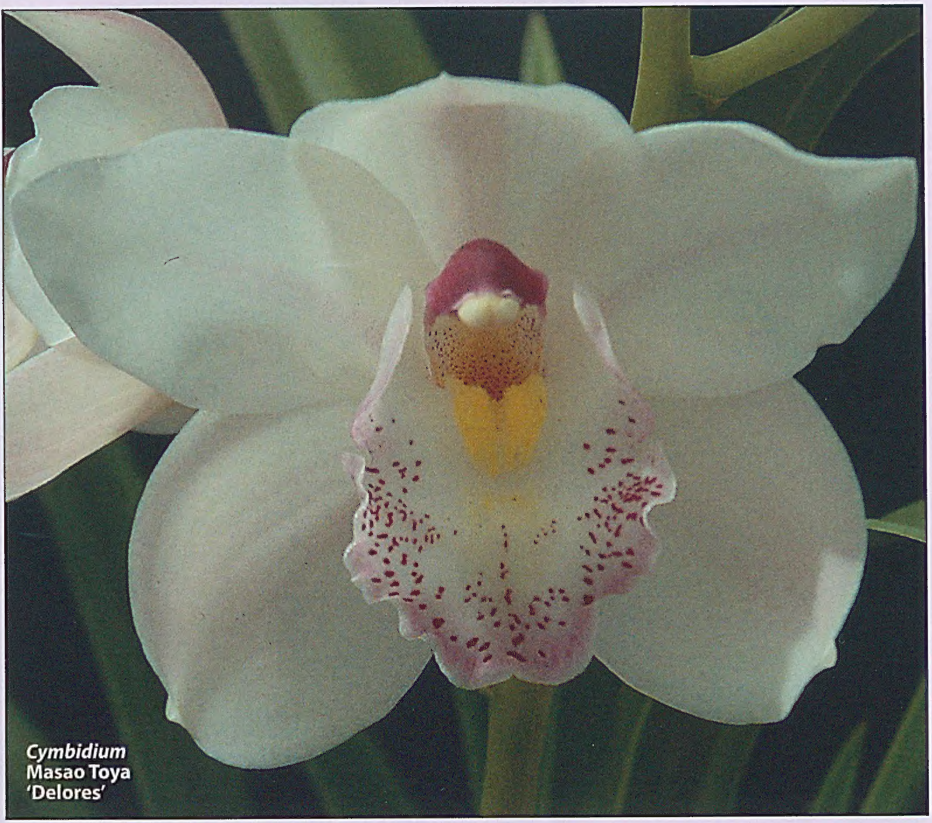
I'm a big fan of *C.* Masao Toya 'Delores'. Bred by Alvin Bryant (although registered elsewhere) in the late 1970's, 'Delores' has made some excellent hybrids for the early spring period. It is a very productive plant with excellent stem strength and presentation, but it is most famous for its ability to have pollen caps that withstand the heat of spring and not blush the flowers. This set all contain 'Delores' in the lineage.


Cymbidium
Masao Toya
'Delores'

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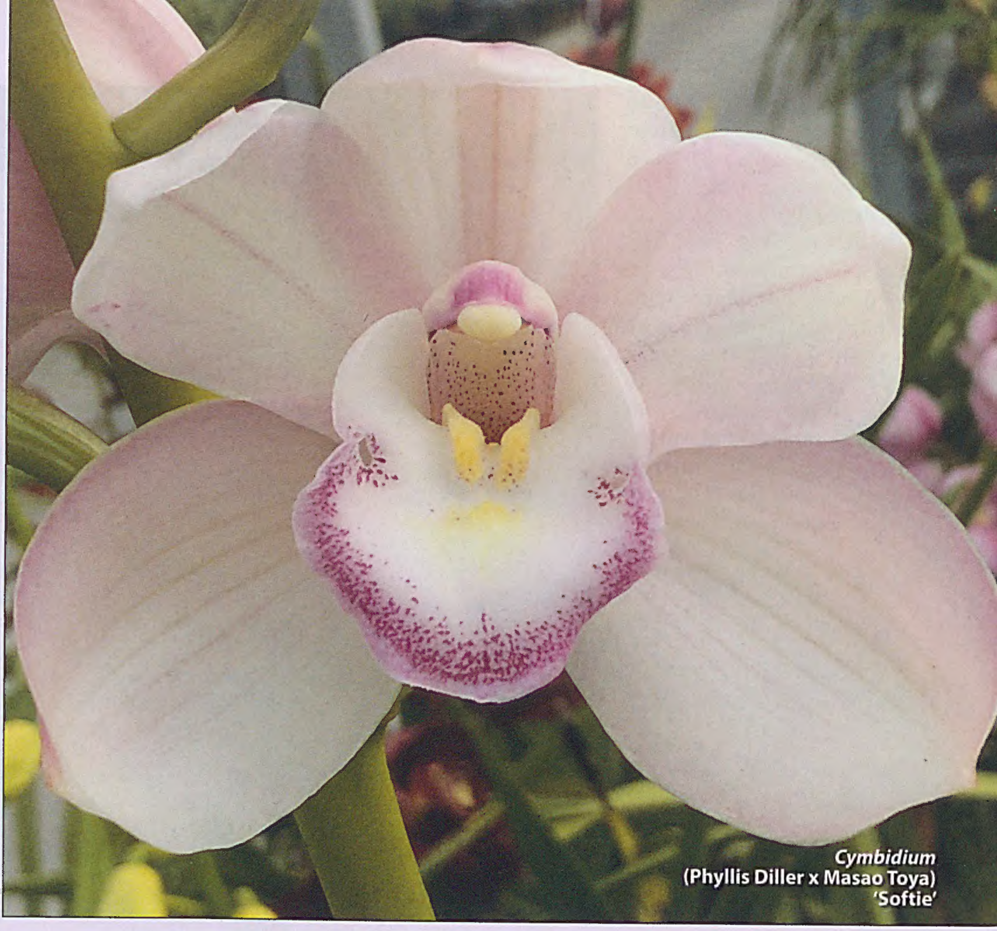
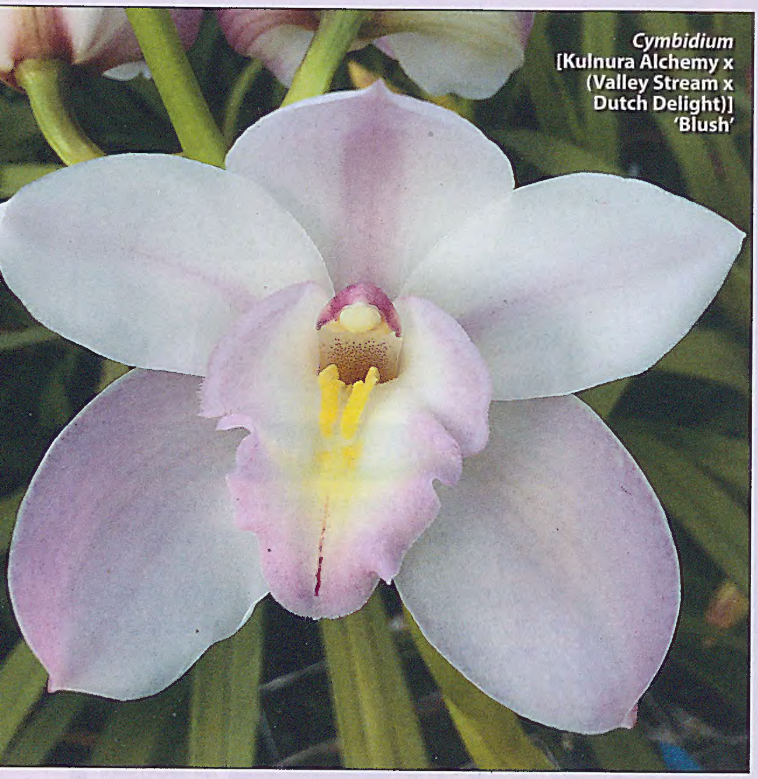
'Softie' was created from my 1996 cross, *C.* (Phyllis Diller x Masao Toya). This wonderful plant infuses spike production and softening of colour, as seen in *C.* Hungarian Beauty x (Phyllis Diller x Masao Toya) 'DL'. This style of dramatic contrasting lip has risen in popularity in the last few years, although I personally prefer the soft lip of *C.* Kulnura Alchemy x (Valley Stream x Dutch Delight) 'Blush'. This pretty flower has 'Delores as a grandparent in the *C.* Kulnura Alchemy.



Cymbidium
(Phyllis Diller x Masao Toya)
'Softie'



Cymbidium
[Kulnura Alchemy x
(Valley Stream x
Dutch Delight)]
'Blush'

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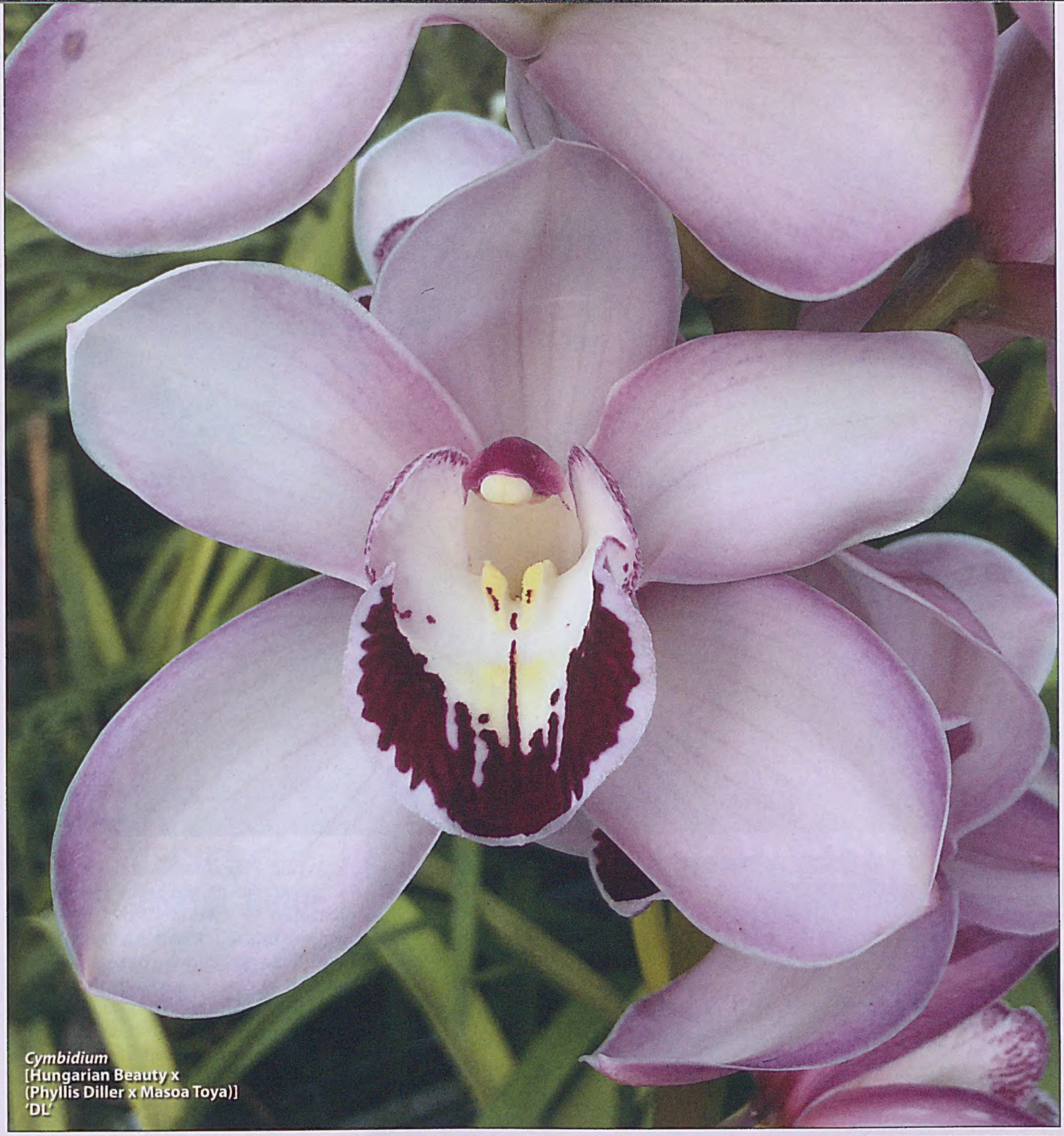

Cymbidium
[Hungarian Beauty x
(Phyllis Diller x Masoa Toya)]
'DL'

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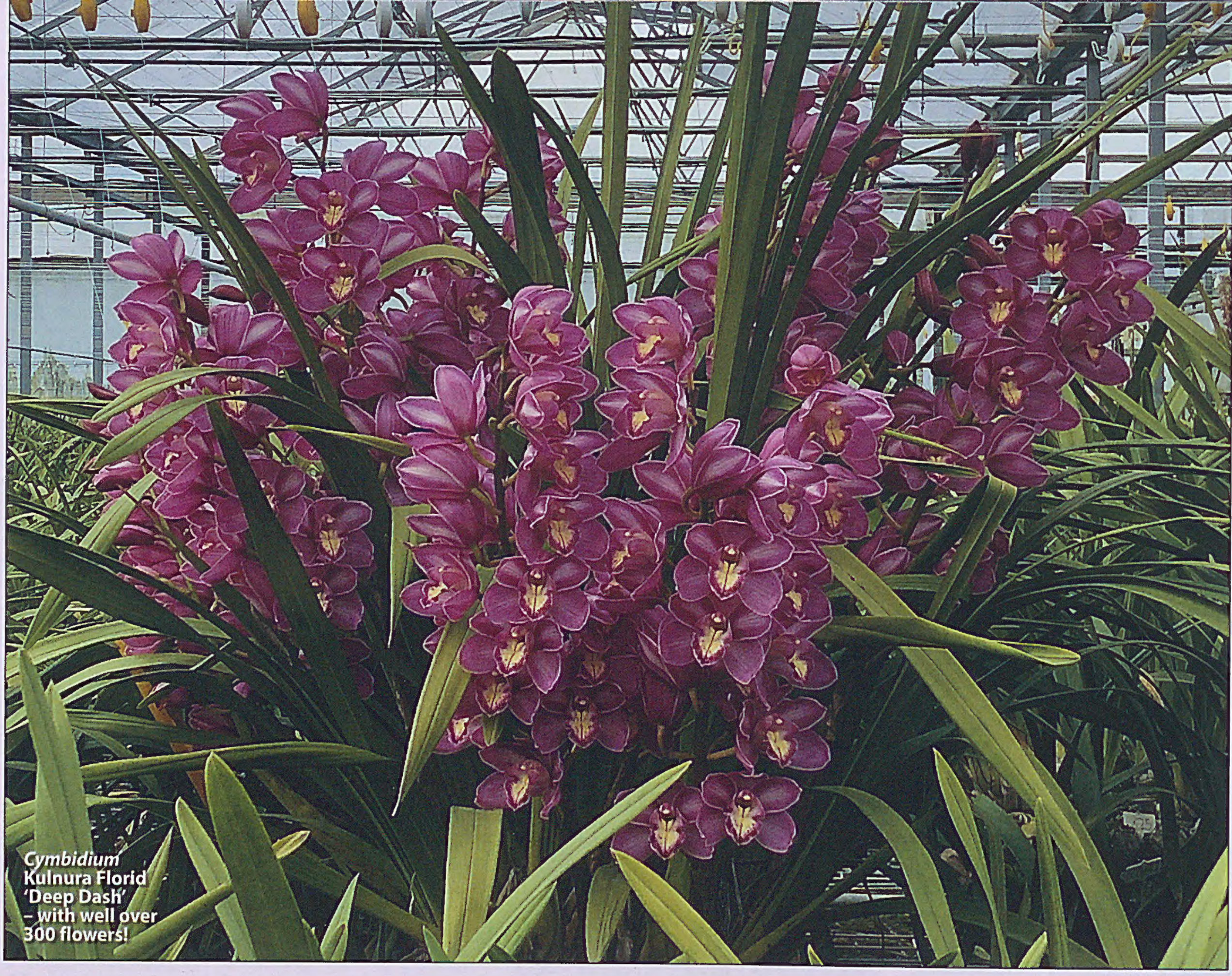
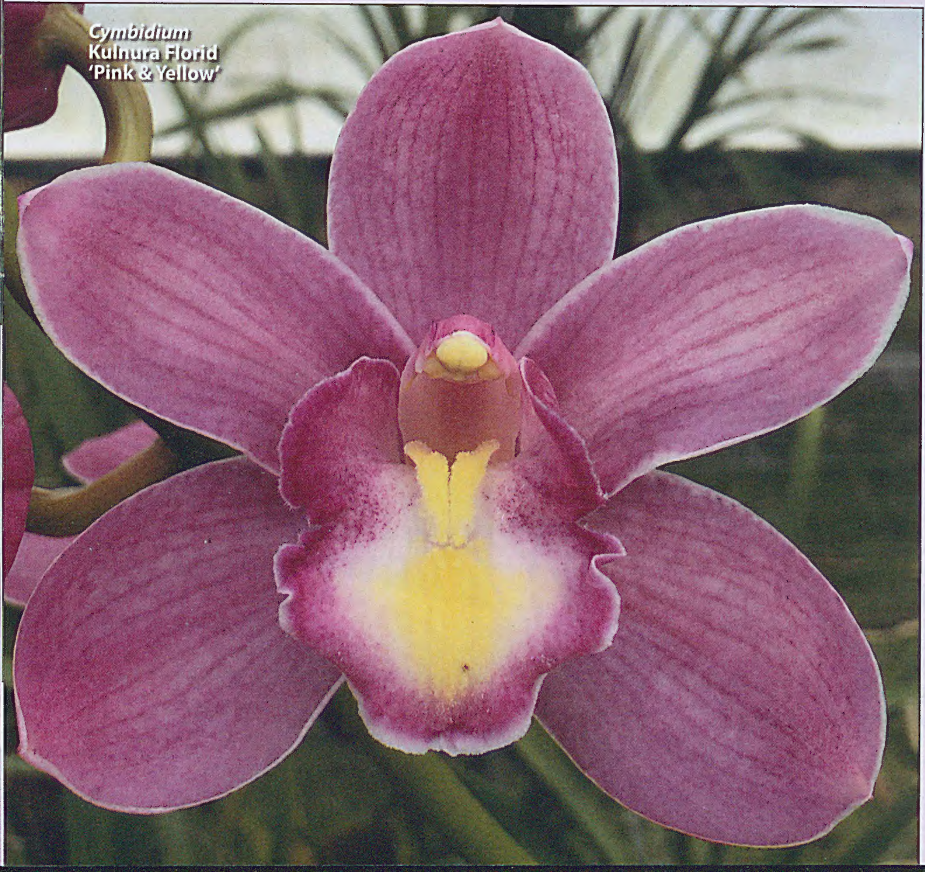


Cymbidium Kulnura Florid 'Deep Dash' – with well over 300 flowers!



Cymbidium Kulnura Florid 'Pink & Yellow'

While I'm on the subject of lips, *C.* Kulnura Florid is a cross that features a wonderful contrasting yellow in the lip. In both 'Deep Dash' and 'Pink & Yellow' we see the extra lift the yellow lip gives to the flower. This is a feature promoted by both Alvin & Greg Bryant and is a trait from *C.* Sylvania. The plant of *C.* Kulnura Florid 'Deep Dash' has 18 spikes of about 20 flowers and is growing in a 300mm pot. Pretty impressive!

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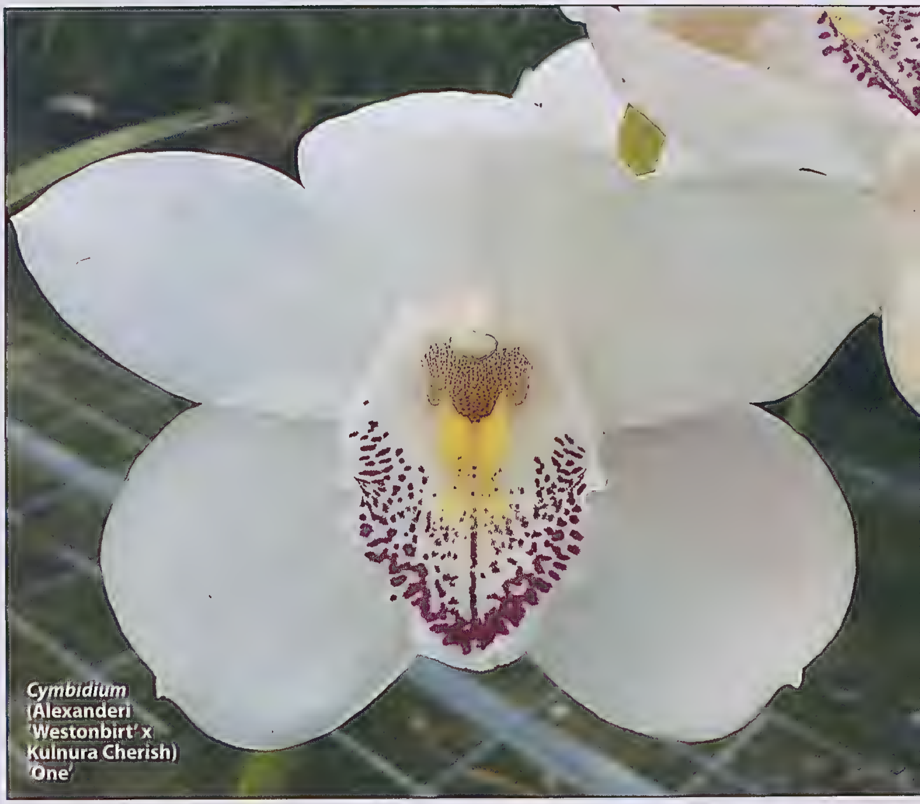
The final 'Delores' grandchild, *C.* (Alexanderi 'Westonbirt' x Kulnura Cherish) 'One', is a first blooming seedling carrying two spikes on the bulb and wonderful clear colouring, despite flowering in very bright light.



Cymbidium (Alexanderi 'Westonbirt' x Kulnura Cherish) 'One'

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Oakeley, Henry Dr. and Braem, Guido Dr. 2011

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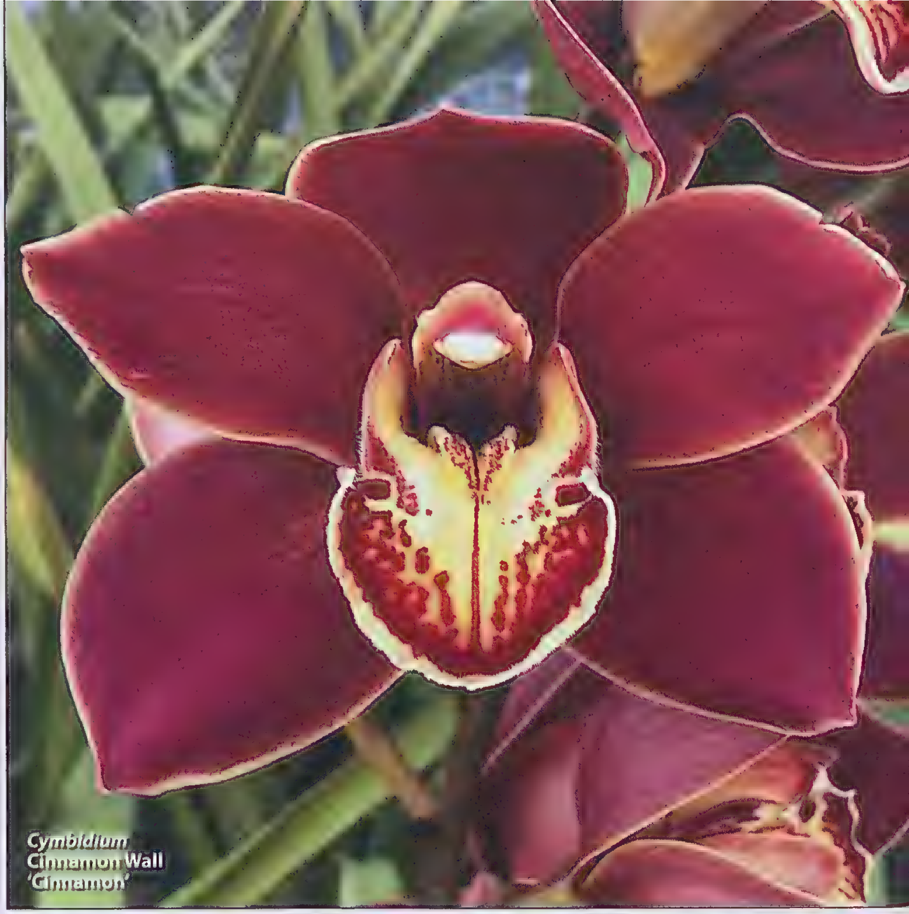
On to some orange tones. I'd have to say that *C.* Cinnamon Wall 'Cinnamon,' is one of the most amazing coloured Cymbidiums. The intensity of the red pigment in just a couple of cells thickness is amazing. It is this layer of colour that makes working with 'Cinnamon' so much fun. To create *C.* Kulnura Oxide we combined *C.* Cinnamon Wall with the mid-pink coloured *C.* Boobong (parent of *C.* Kulnura Florid). It's the interaction of the layers, clear mesophyll (of *C.* Boobong) or yellow mesophyll (of *C.* Cinnamon Wall) and intensity of the epidermal colouring that give these different results. The yellow is also visible in the edging of *C.* Khan Wall 'Orange Flame'. The orange we see is an interaction of the yellow mesophyll layer and the red in the epidermal layer. In effect, orange Cymbidiums yellow with varying amounts of red pigment in the top layer of the segments.


Cymbidium Cinnamon Wall 'Cinnamon'

Australian Orchid Review

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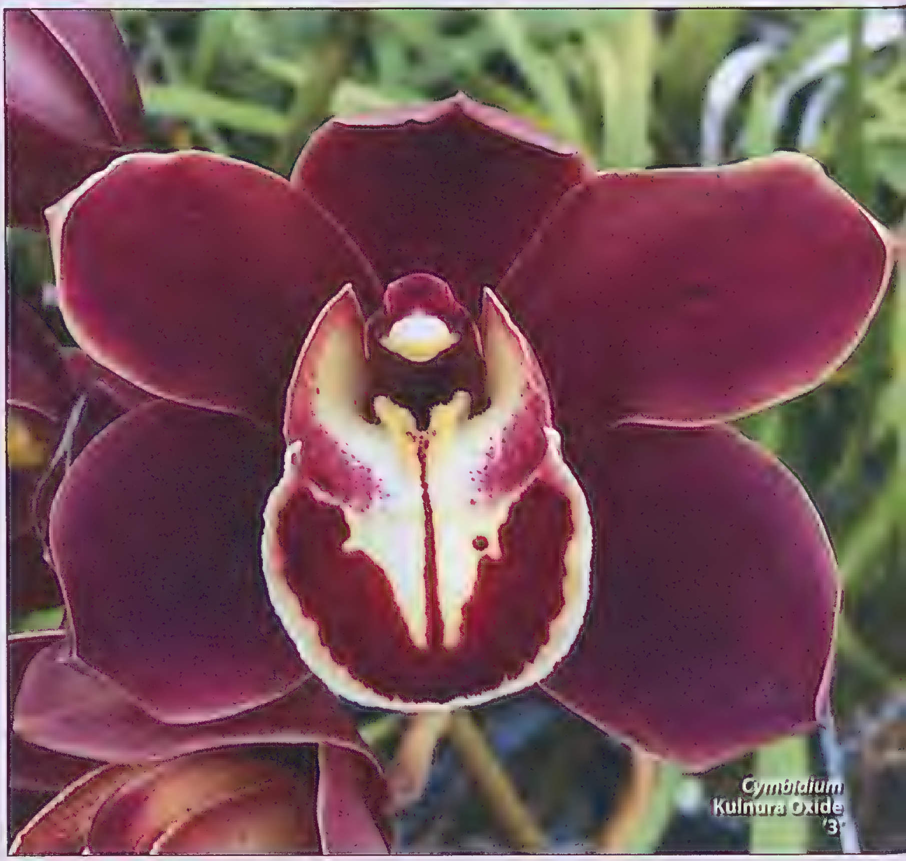
Cymbidium Kulnura Oxide '3'

This *C.* Khan Wall was made using *C.* Khan Flame 'OC'. The resulting progeny are very intensely coloured. In *C.* Kulnura Titan 'Sun Rise' we can see how it has very little overlay, whereas it's offspring *C.* (Kulnura Titan x Kulnura Freedom) 'Golden Orange' has quite a lot more of the red pigment showing.

Getting the balance of yellow and red right can really set a flower apart from the bunch. As I have said in previous articles, colour is everything. ■

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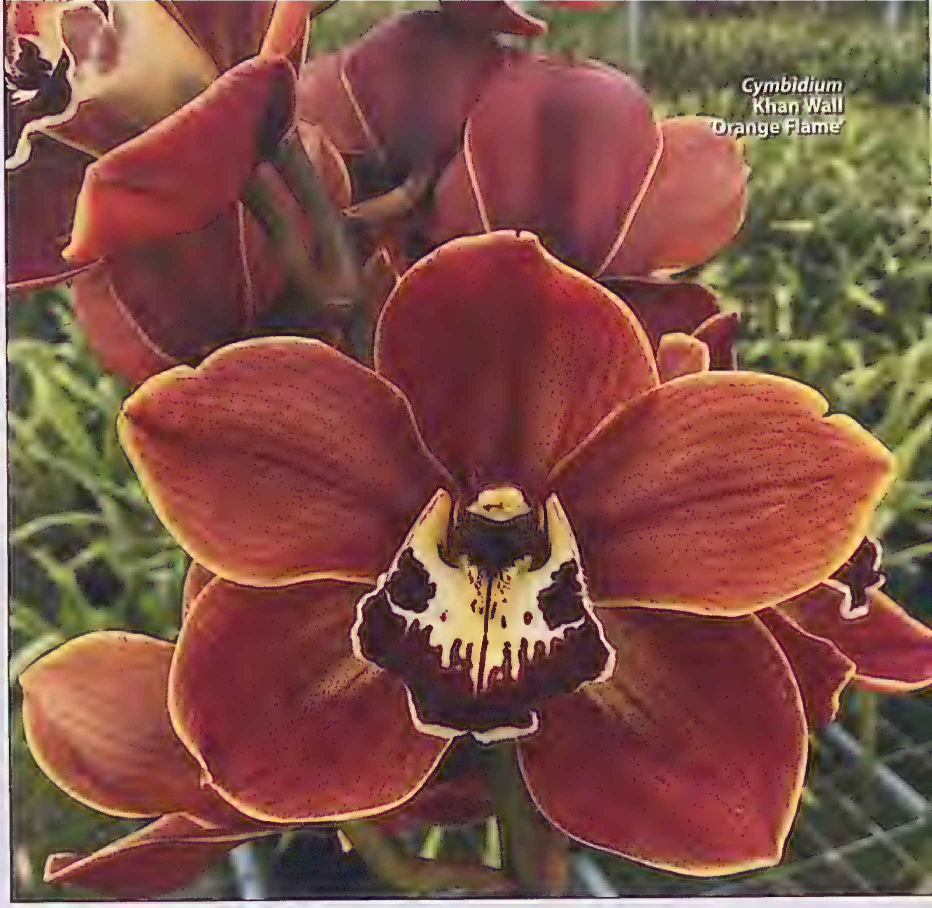
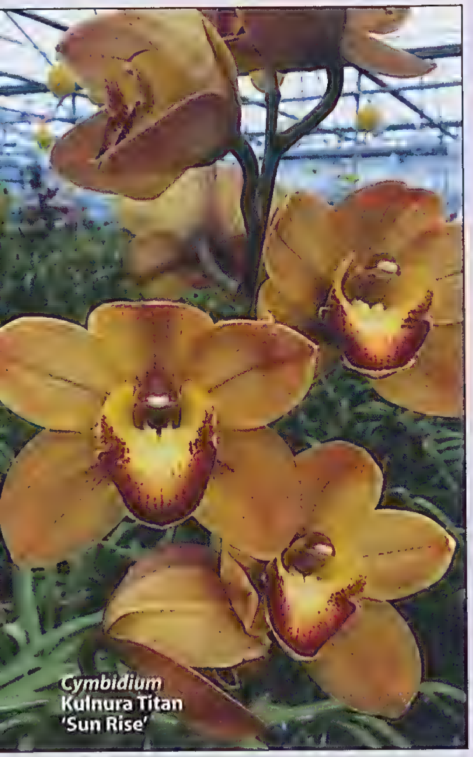
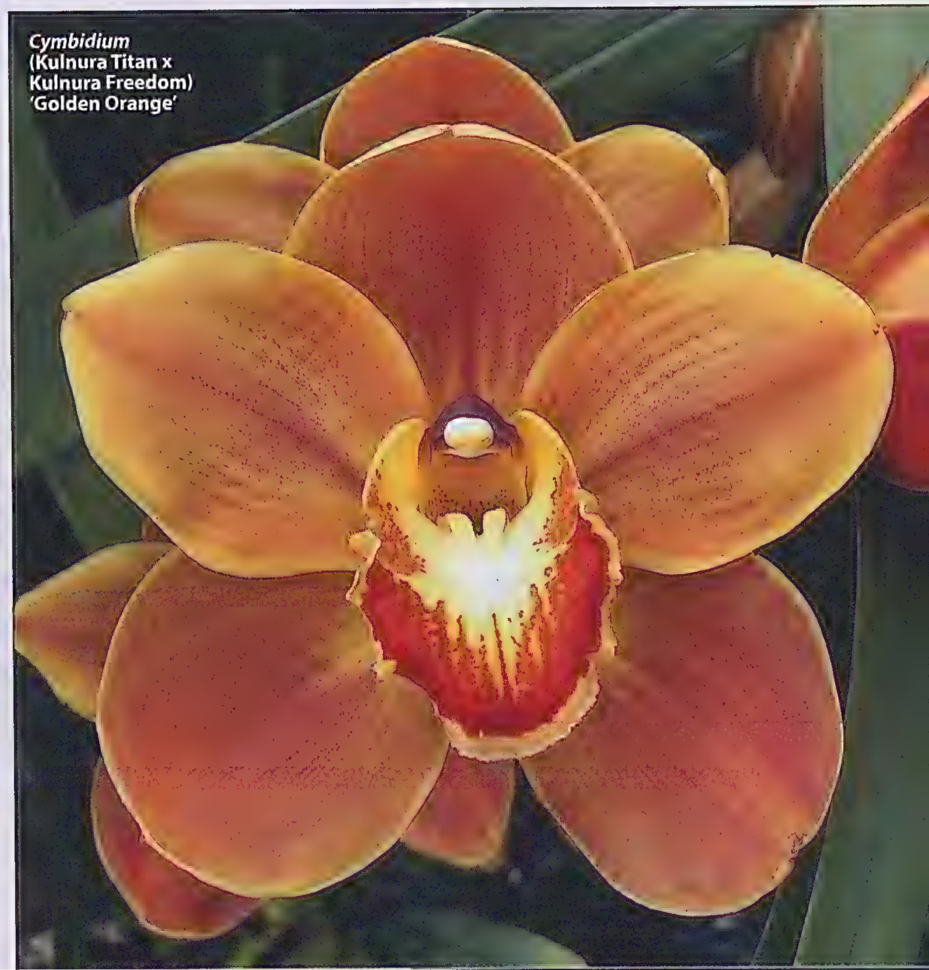


Cymbidium Khan Wall 'Orange Flame'



Cymbidium Kulnura Titan 'Sun Rise'



Cymbidium (Kulnura Titan x Kulnura Freedom) 'Golden Orange'

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Cymbidium
(Last Tango x Little Rod) 'Tobruk'

by David Banks

The Grand Champion (plus Champion Miniature Cymbidium) at the recent 2019 National Orchid Extravaganza held at Dural, NSW went to the (as yet) unregistered Australian-bred hybrid *Cymbidium* (Last Tango x Little Rod) 'Tobruk'. It was grown, exhibited and magnificently flowered by Norm and Val Shipway.

Greg Bryant kindly informed me that this came from Bryants Orchids "99100" cross between *C.* Last Tango 'Geyserland' x *C.* Little Rod 'Yowie Bay'. Kevin Black took flasks from this cross and Mal Ferguson purchased what bloomed to be 'Tobruk' as a seedling from Kevin. Mal and Fay Ferguson live in Tobruk Avenue, hence the cultivar name.

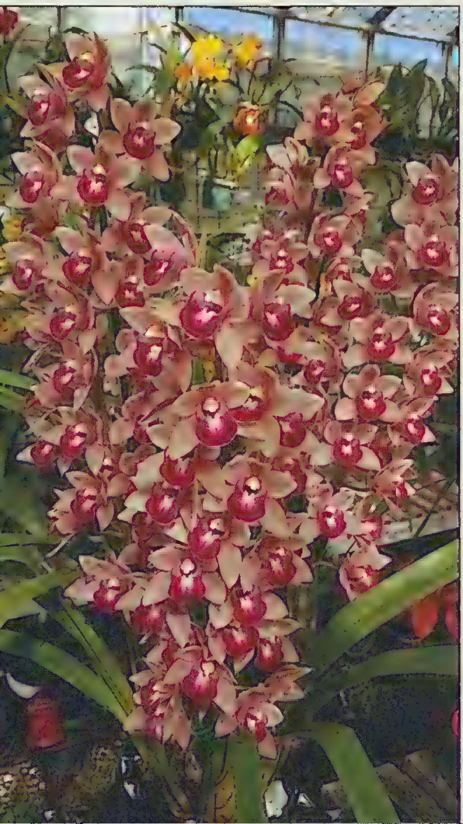
Mal and Fay have been long time friends of the Shipways and they often share special plants between themselves, which also is a great insurance policy.

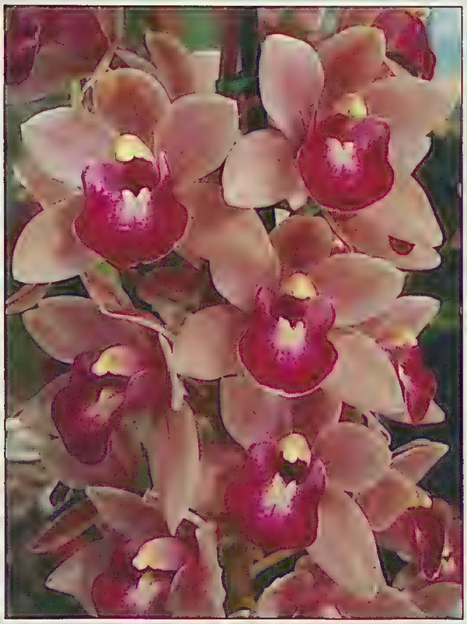
This is an outstanding cultivar with compact foliage, vigorous growth and high production. The show winning plant had 4 upright inflorescences with up to 40 vibrant flowers on the stem, and all this in a standard 150mm pot! The two tone effect is set off by a striking broad, flat and round colourful labellum.

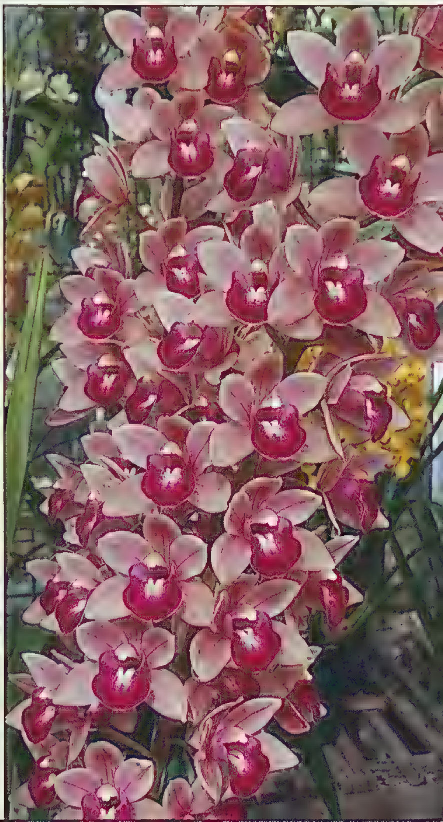
'Tobruk' has many desirable features and characters that hopefully will be passed onto its future progeny, as I am sure it will be an outstanding breeding plant. There may be limited numbers of mericlones released in the not-too-distant future. This is an orchid I am sure every *Cymbidium* enthusiast would like in their collection, especially those who favour the miniature and intermediate styles.

Congratulations to Greg for his foresight in producing such a distinctive hybrid, Mal for raising it from a seedling and realising its potential, and Norm for growing it into the show winner it became. Thanks to Norm & Val for inviting me over to their home to take the included images under natural light. ■

David Banks
Email: david@hillsdistrictorchids.com







The *Odontoglossum* Alliance Revisited

Text and photos by Andy Easton

I have always loved this group of orchids. Cymbidiums are strong and durable, Cattleyas are flamboyant and regal but "Odonts", as they are known, (traditional *Odontoglossum* and their intergeneric hybrids) are perky, vibrant and so diverse as to catch anyone's attention.

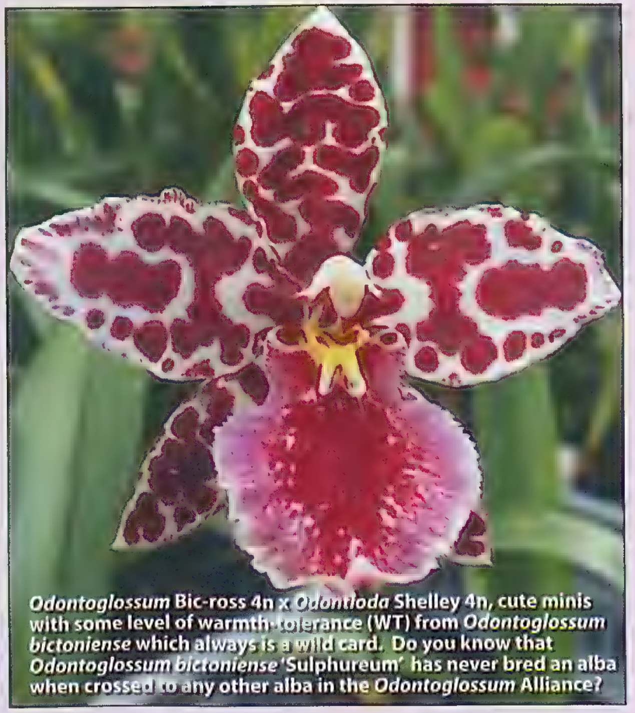
Although worldwide, this group has fallen into decline over the past three decades, the International Odontoglossum Alliance (IOA) has held together and now has burst back into vibrance with wonderful, regular, bi-lingual journals and an almost tripled membership. Unlike the American Orchid Society (AOS) etc., membership is free and online access to their publications easy. Best of all, the IOA has never gone along with the nonsense foist on enthusiasts by some at Kew and continue to use the time-honoured names for the genera we love. In fact they have gone one better; as a Journal the IOA are able to register and publish new hybrid names in a traditional format. Once these names have been published, they are registered fully and correctly. Now if someone shows one of these plants for an award and wishes to register said hybrid with the RHS to secure the award, that is their prerogative and providing they use the validly published grex name and give credit to the hybridiser of record, there will be no problems at all as far as the IOA is concerned.

Now, many things are changing in today's Odonts, as they are affectionately known by enthusiasts. The traditional lines of Europe as exemplified by plants from Vuylsteke, Pauwels, Charlesworth, Stuart Low, Keith Andrew, Mansell & Hatcher, Stonehurst, Vacherot & Lecoufle etc were magnificent but also difficult growers in many areas of the world. Now with a little effort, they could be grown quite satisfactorily as evidenced by the late Australian aficionado, Gerald McCraith. Gerald did rather well with traditional types in Victoria, both growing and hybridising successfully in a regular greenhouse with no special modifications. His hybrid, *Odontioda* Murray River is still in cultivation and quite lovely. Clive Halls persists with a scattering of traditional Odonts in a climate that few would consider "Odont optimal"! But where are the bulk of the Odont Alliance grown in Australia today... why in Kin Kin, Queensland! More on this shortly!

Let's recap a little on the decline in European Odonts. Many priceless plants have been lost but many were also saved. In the latter days of Charlesworths, those awful Greatwood brothers forgot how to grow plants and nobody ever cleaned the last year's shade off the greenhouses. It was not uncommon to purchase plants from them in the 1970's and you would receive a plant with 3-4 bulbs, each the size of a broad bean with no increase whatsoever. Fertilising Odonts? What a load of nonsense! The company collapsed financially by 1980 and deservedly so. There was a bit of a shuffle around and a lot of the stock went to McBeans which was on the way down itself.

Very fortunately, Eric Young saw the impending disaster and he secured as much key stock as possible, with the help of Alan Moon and took them to Jersey for safekeeping. The orchid world owes Eric Young an immense debt because he literally acted in the nick of time. McBean's Odonts soon became an embarrassment and then Ray Bilton went broke, started a company called Orchid Answers and made a rough living by going to Holland and Germany buying Odont culls and bringing them back to Britain to sell. Through the foresight of Eric and Alan, Professor Don Wimber was recruited to spend part of each year working in Jersey and he assisted greatly in all aspects of the Jersey facility. Mansell & Hatcher had surpassed Charlesworths in Odonts by the late 1960's and they produced some wonderful hybrids from what some might snootily have deemed second level Charlesworth parental stock. Now they too have unfortunately passed from the British Odont scene.

When I relocated to Eugene, Oregon, USA in 1973, there was still a considerable level of activity in the *Odontoglossum* Alliance. The Beall Company on Vashon Island in Washington State had a large breeding collection that Gary Baker used wisely and widely. Gordon Hoyt Orchids was winding down in Seattle but still had some super *Miltoniopsis*. The Rod McLellan Company in South San Francisco were producing an exciting array of



Odontoglossum Bic-ross 4n x *Odontioda* Shelley 4n, cute minis with some level of warmth-tolerance (WT) from *Odontoglossum bictoniense* which always is a wild card. Do you know that *Odontoglossum bictoniense* 'Sulphureum' has never bred an alba when crossed to any other alba in the *Odontoglossum* Alliance?

Odontoglossum Intergenerics and also cloning some of them using the superb skills of Richard Smith. Howard Liebman was making some wild hybrids in Southern California as was the late, great Martin Orenstein.

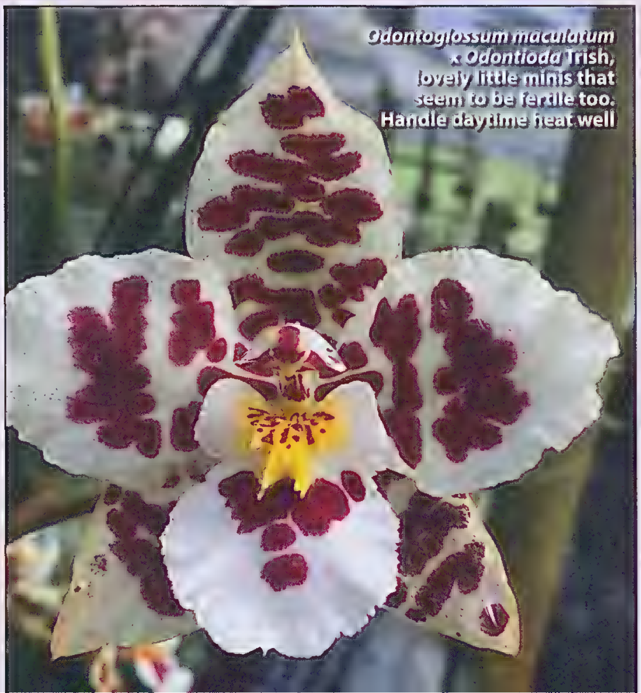
In the Bay area, a youngish fellow named Bob Hamilton lost his passion for Cattleyas and discovered Odonts! Bob Hamilton has been the seminal influence in world Odonts since the 1970's, learning from Bob Dugger and other others while eventually teaching us all. The American "Godfather of Odonts", Bob Dugger, was down in Solana Beach, happily retired and making great hybrids that he sold to McLellans and others. Bob was an average grower with his poor water down south but such an advocate for the group of orchids he loved that he was memorialised with the Robert Dugger Odontoglossum Alliance Award given out annually by the AOS, even as the shameless devils have gone over to the darkside and bowed to Kew's arrogant nonsense names!

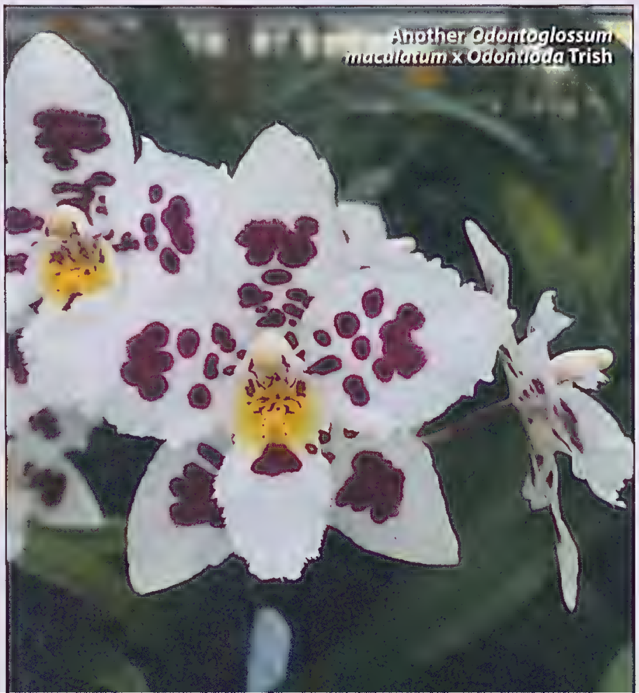
Looking at Bob Hamilton's influence more closely, he worked his whole life as a technical person, integral to so many famous scientists at Berkeley University who required his complex skills in their many and varied experiments. Bob has rubbed shoulders with more Nobel Prize winners than I've ever heard of! Because he loved Odonts and studied them closely, he was the first to pick up on chromosome doubling research by use of Oryzalin. OK, the paper was for lilies but Bob quickly modified the protocols for orchids and he has single-handedly changed today's availability of doubled ploidy stock. All of his trials and modifications are open source, shared freely and generously. He's pretty generous with Odont plants too! Back when I left New Zealand in 2000, I was moving to Florida, hardly an Odont paradise so I had a very good and varied collection of them looking for a good home. Free and I would even pay the freight! There was a fellow in Oregon who was hot to get them but he needed time to prep a space. I was ready to leave New Zealand so Bob and John Leathers kindly agreed to pot and hold the plants in the interim and took as I recall, something like five plants for all the effort, pots and media. As usual, way too generous. Plants eventually left Pacifica for Oregon where they were neglected, mishandled and ultimately lost. I was furious at the lazy oaf who had killed off one of the better Odont collections in the world and vowed never to get involved with Odonts or him again!

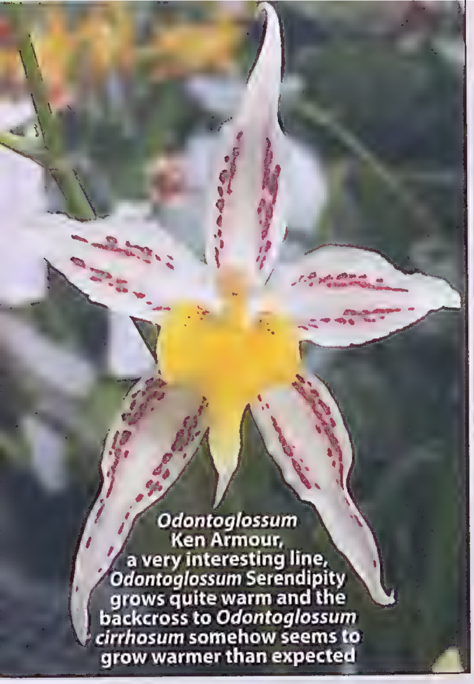
When I returned to California in 2007, of course I went to visit Bob and John's greenhouse in Pacifica. I was adamant that I would not grow any more Odonts, just Cyms and Cattleyas. That cunning Hamilton lured me back in. When I was living and growing orchids in Florida he had sent me a test plant of something named *Oncidium trilobum* x *Odontoglossum nobile* (syn. *Odontoglossum pescatorei*) that had been treated with Oryzalin. I put it in my greenhouse and never paid much attention to it until it made a spike. Now it was a little too long a spike but it bloomed well and I was astonished. How could a plant that was 50% cool growing *Odontoglossum* flower in Florida conditions? Of course, when I was visiting in Pacifica, Bob offered me a selection of *Odontocidium* Tribbles 4n seedlings to take back to grow in Salinas. Hooked again!

What we are seeing in the *Odontoglossum* Alliance now is a rapid introduction of warmth-tolerance whilst producing a phenotype that really is difficult to distinguish from more traditional types. I hear a constant complaint that the market does not want as many yellows and browns, fair enough, so a hybridiser needs to respond to these demands. Let's look at some of the key breeding lines that have been producing a range of colours in the new types of Odonts.

Back in 1984, I was preparing to leave California to return to New Zealand. I was up in San Francisco picking up a load of plants from the Rod McLellan Company to turn over and as I walked out to the wholesale area, I passed through the retail shop. It was June and they had a massed group of *Miltonia moreliana* 'Royalty' (back then it was known as *Miltonia spectabilis* var. *moreliana* 'Royalty') clones for sale at $12.95. One plant caught my eye, it was obviously a tetraploid form and on the back of the label it had the notation +C. I was then sure that their Lab had been playing around with colchicine and the plant was a planned conversion. I couldn't get the $12.95 plus sales tax out of my pocket quickly enough!


Odontoglossum maculatum x *Odontioda* Trish, lovely little minis that seem to be fertile too. Handle daytime heat well


Another *Odontoglossum maculatum* x *Odontioda* Trish


Odontoglossum **Ken Armour, a very interesting line, *Odontoglossum* Serendipity grows quite warm and the backcross to *Odontoglossum cirrhosum* somehow seems to grow warmer than expected**

The attendant suggested I just add the plant to my wholesale order and take a 30% discount but I said it was to be a gift for a friend and quickly bought it and put it in my van. I was not lying; I drove down the road to Tom Perlite's greenhouse and showed him my find. I explained I wanted a pod on it and could not get the pod ripe in time to harvest it before we departed to New Zealand. He duly obliged with a crossing using pollen of *Odontioda* Elpheon and we agreed to share the flasks. I was of course aware that the "fount of knowledge" from Hawaii, Moir had warned people never to breed with *Miltonia spectabilis*... like in so many other aspects of hybridising, he was totally wrong! When the cross matured, Tom named it *Vuylstekeara* Mem. Mary Kavanaugh and for both of us it was a fertile and very useful parent. We have bred *Vuylstekeara* Mem. Marion Sheehan and *Vuylstekeara* Fall in Love in this line and both have gained awards with an average flower count of almost 20 blooms! The latest in the type is the unregistered hybrid of *Vuylstekeara* (Mem. Mary Kavanaugh x *Odontioda* Charlesworthii 4n) which blooms freely in Colombia at quite low elevations and is a stunning flower for both colour and shape.

So, where has *Odontocidium* Tribbles 4n gone in hybridising? One of its offspring, *Wilsonara* Tipples (x *Odontioda* Ray's Red) gained an HCC/AOS in Hawaii in 2006. But by far the most interesting and outstanding Tribbles hybrid to date has been Bob Hamilton's crossing of *Wilsonara* John Miller (*Odontioda* Burning Bed x *Odontocidium* Tribbles). I bloomed the first one of a cross that was made reciprocally, and it is a stunning red. But by far the bulk of the seedlings were made with the Tribbles holding the pod and nearly all of them have come patterned. They have been one of the most even and highest average quality seedling crosses I have ever seen. Tribbles imparts a "fingerprint" to most of its progeny, the distinctive triangulate lip of *Oncidium trilobum*. In the second generation from *Oncidium trilobum*, colour appears quickly and easily. *Wilsonara* Wilda Bullard (*Odontioda* Nichirei Sunrise x *Oncidium trilobum*) has become our "go to" parent for some really vigorous intergenerics. The sparkling red-orange (*Odontioda* California Cherub x *Wilsonara* Wild Bullard) 'Ray' wowed recent visitors to Colombia for the Medellin Orchid Festival.

That Hamilton man is always tinkering and I guess he decided if the dark *Miltonia spectabilis* var. *moreliana* worked well, he might as well use an alba form of *Miltonia spectabilis* and create some alba lines. Hence *Vuylstekeara* Nova (*Miltonia spectabilis* forma *alba* x *Odontoglossum* Samares. At this stage we have seen triploid and hexaploid forms of *Vuylstekeara* Nova and both are fertile. Because at Colomborquideas we are particularly seeking increased warmth-tolerance in Odonts, we have been working on using the hexaploid Novas with diploid traditional Odonts. This intensification of warmer growing influences is proving very beneficial for customers in both warmer climates and even Dutch pot plant growers who want to be able to push their clones along at higher night temperatures. The first hexaploid Novas crossed with a diploid alba *Odontoglossum nobile* (syn. *Odontoglossum pescatorei*) are just a few months from blooming so anticipation is peaking.

Another great Hamilton line involves the use of *Oncidium fuscatum* forma *album* with a fertile triploid traditional "alba" *Odontioda*. The resultant product which we are patent-bound not to identify beyond the Trade Name

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"Yellow Snow" is a dream grower that produces multiple upright medium length spikes of anthocyanin-free, golden alba yellow on fast maturing plants. It has already hit the European market and soon will be seen in Australia. *Oncidium fuscatum* is able to compensate for the 3:1 ratio of warmth-tolerant to cold loving, very capably.

There are so many new lines in the pipeline that it should be time to get excited. The tetraploid strain of *Odontoglossum* Summit (*bictoniense* x *brevifolium*) is also doing great things in its early hybrids. The galloping growth habit of *Odontoglossum brevifolium* is completely tamed and all the great qualities of *Odontoglossum bictoniense* are being passed through. Normally *Odontoglossum bictoniense* makes spikes that are too tall but in *Odontoglossum* Summit 4n, it seems to have found the right match.

At Colomborquideas we are also working in a wide range of other Odont Alliance avenues. Using progeny from the most useful Mansell & Hatcher alba form of *Odontoglossum* Extraria, we have taken a tetraploid selection of the diploid alba *Odontoglossum* Extraria crossed to a triploid alba *Odontioda* George McMahon that has quite a green cast and crossed it with the tetraploid strain of *Odontoglossum* Rolfeae that is distinctly green. The world is looking for a bright green Odont and hopefully it will soon appear.

Another avenue that has proved encouraging are the hybrids from *Odontoglossum* Bic-ross 'John' 4n. They are very compact growers and seem to take warm spells in their stride. One of the best parents in terms of fertility are the selections of *Odontoglossum* Bic-ross 4n x *Odontoglossum nobile* (syn. *Odontoglossum pescatorei*) 4n. Heavily dominated by the pod parent in the F1, we expect a much more dazzling array of shapes and colours in the F2. *Odontoglossum* Bic-ross types do well in the Netherlands and possibly a Colombian spin on the mix will prove interesting.

Many years ago, we cloned a selection from *Wilsonara* Kendrick Williams. Now both the hybridiser and the person for whom the hybrid was named, are long dead. Yet every year I see one particular nursery in Australia who must have got one of the clones, posting yet another picture of this old-timer to the predictable oohs and ahs of the Facebook set. I find a fifty-year-old clone as the very essence of boring! I caution unsuspecting potential Odont enthusiasts to proceed carefully. There is one despicable Taiwanese nursery that peddles flasks into Australia that are re-clones of clones of clones, literally. Add to it that they nearly always change varietal names and sometimes even grex names. Buy that sort of junk and you will be very disappointed. But there are new clones from original mother plants coming in from both Thailand and The Netherlands. Sam Cowie of Leaf and Limb up in Kin Kin, Qld is doing a great job of growing various members of the Odont Alliance clones and he is adding in new selections every year. Clive Halls at Mt. Beenak never seems to be without a new cross or three! I see the amazing explosion of new Australian *Dendrobium* lines at present and am thrilled. I would be even more thrilled if enthusiasts started sourcing some great new *Odontoglossum* Alliance Intergenerics and started wowing the Australian public with them too! ■

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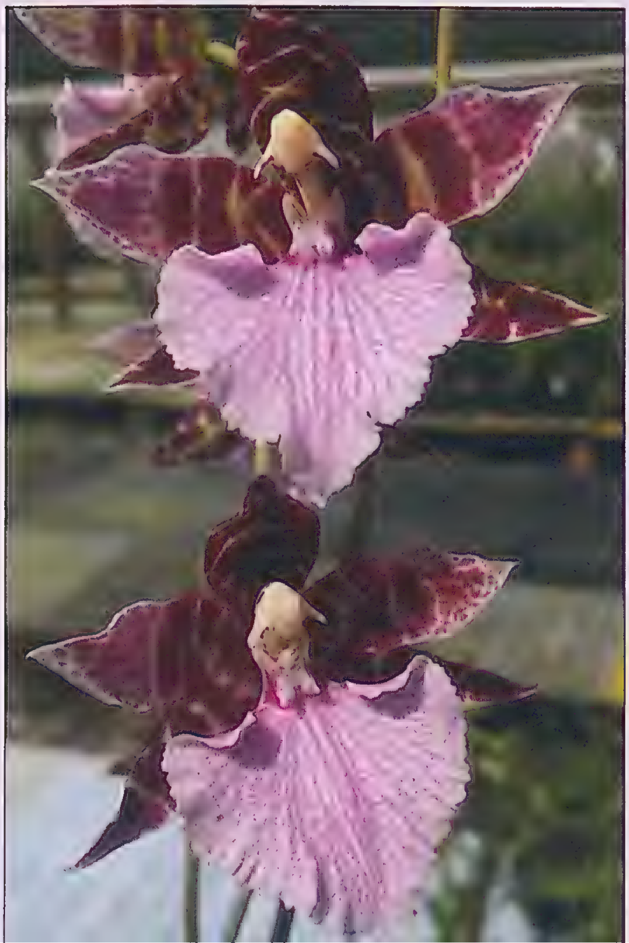
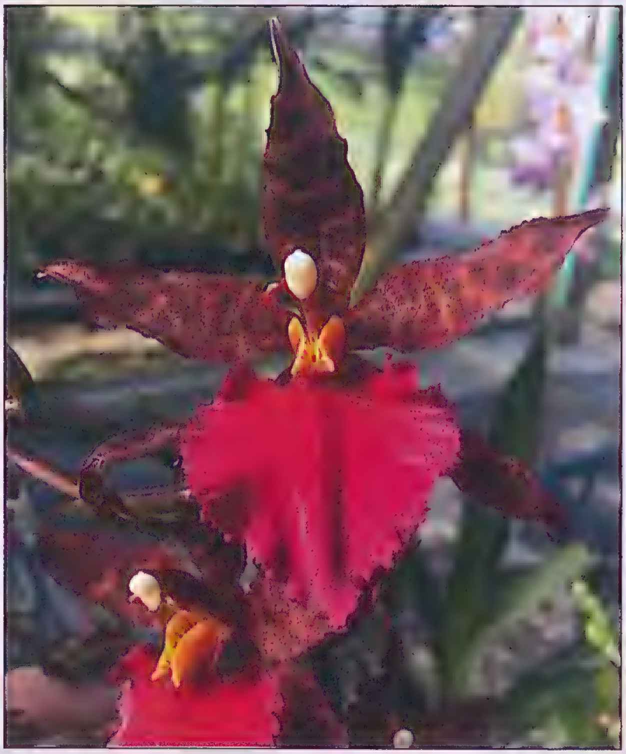
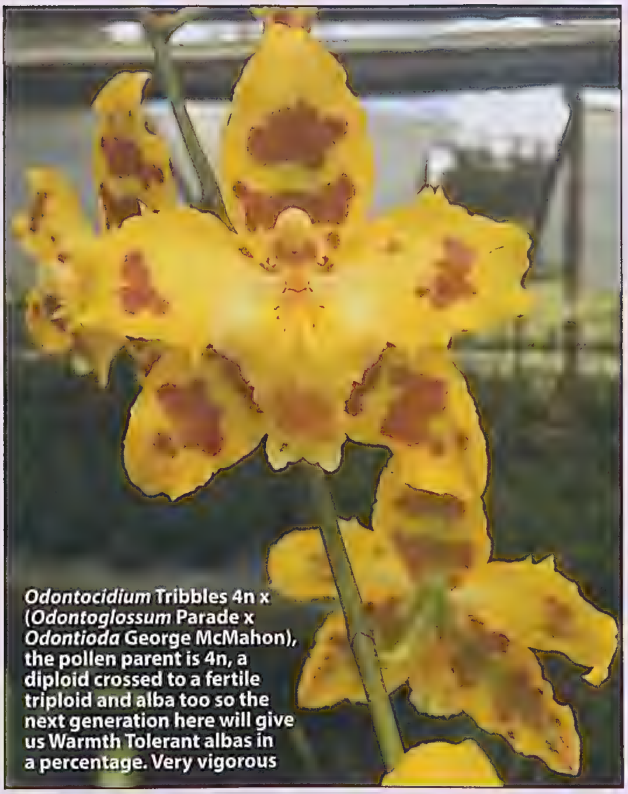
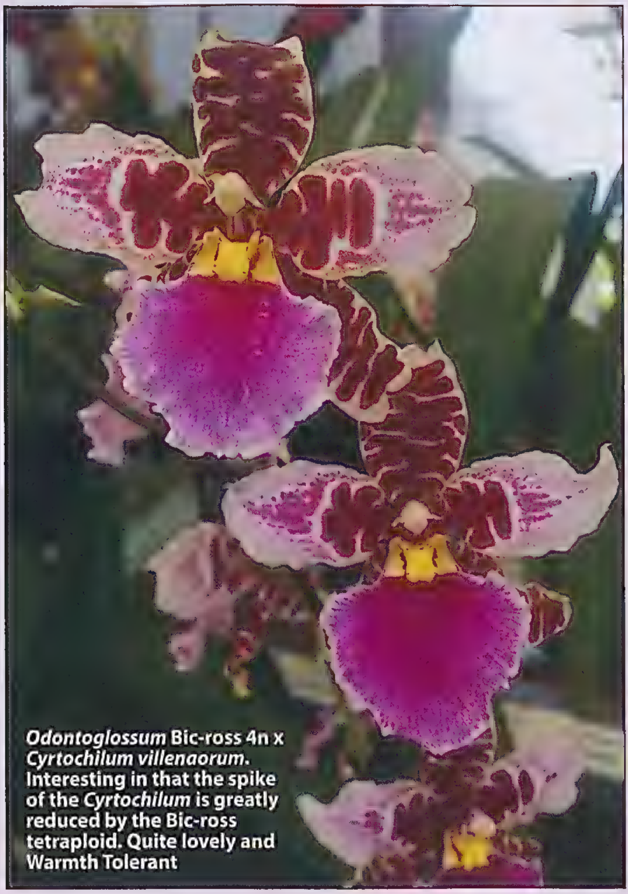




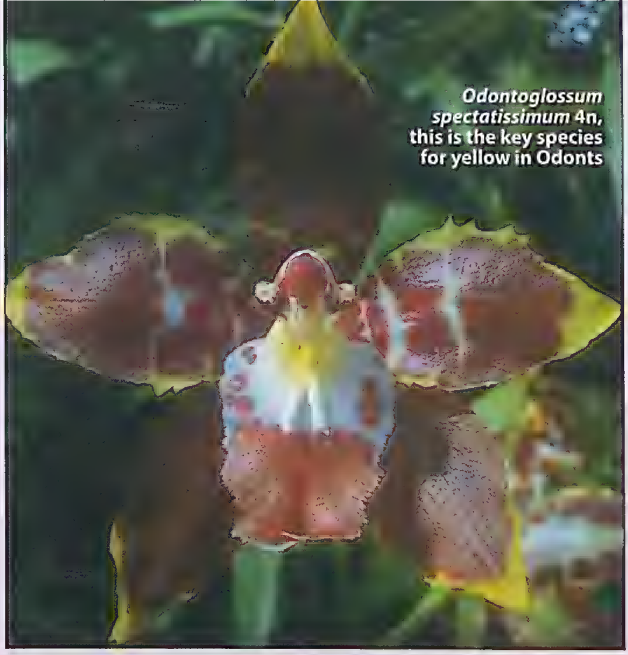
Left and Above: Two selections of ***Odontoglossum* Bic-ross 'John' 4n x *Odontoglossum nobile* (syn. *Odontoglossum pescatorei*) 4n.**
They are very fertile and already we have seedlings coming from a number of crosses to both traditional Odonts and Warmth Tolerant types



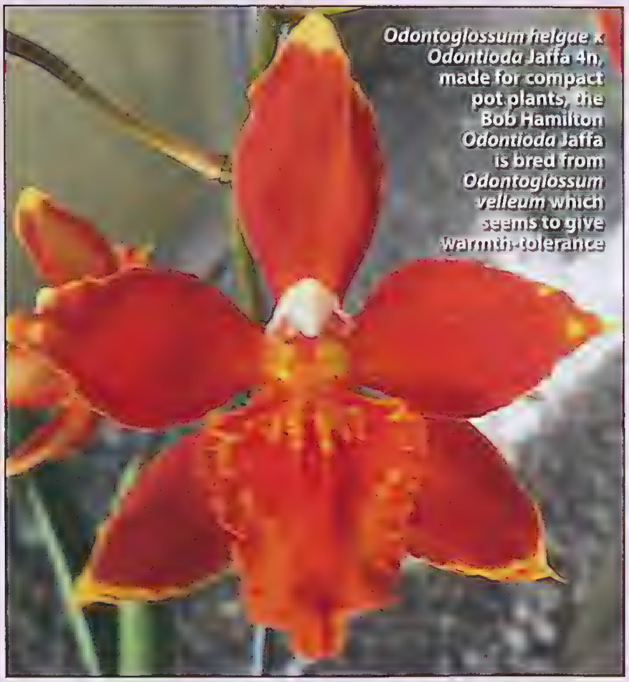
Odontocidium Tribbles 4n x (*Odontoglossum* Parade x *Odontioda* George McMahon), the pollen parent is 4n, a diploid crossed to a fertile triploid and alba too so the next generation here will give us Warmth Tolerant albas in a percentage. Very vigorous



Odontoglossum Bic-ross 4n x *Cyrtochilum villenaorum*. Interesting in that the spike of the *Cyrtochilum* is greatly reduced by the Bic-ross tetraploid. Quite lovely and Warmth Tolerant



Odontoglossum spectatissimum 4n, this is the key species for yellow in Odonts



Odontoglossum helgae x *Odontioda* Jaffa 4n, made for compact pot plants, the Bob Hamilton *Odontioda* Jaffa is bred from *Odontoglossum velleum* which seems to give Warmth-tolerance

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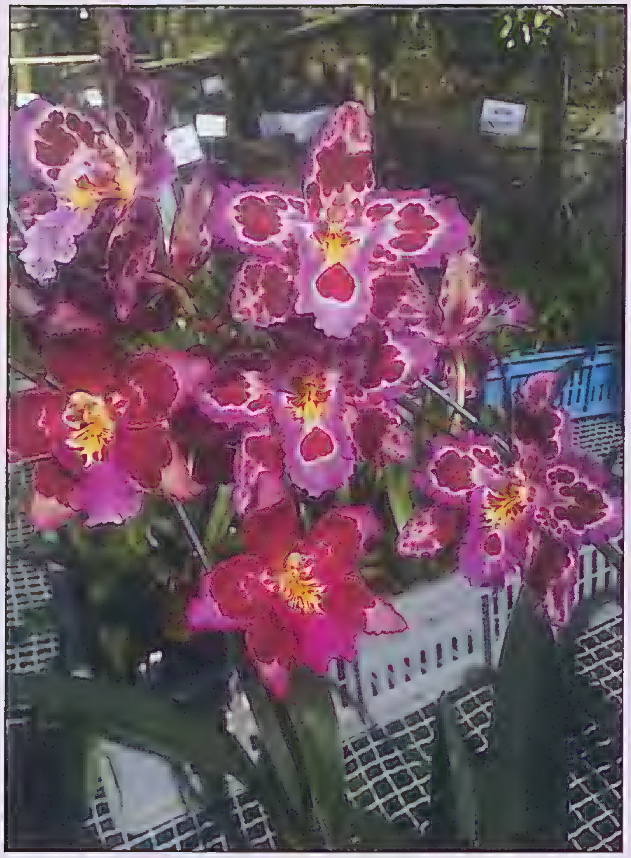
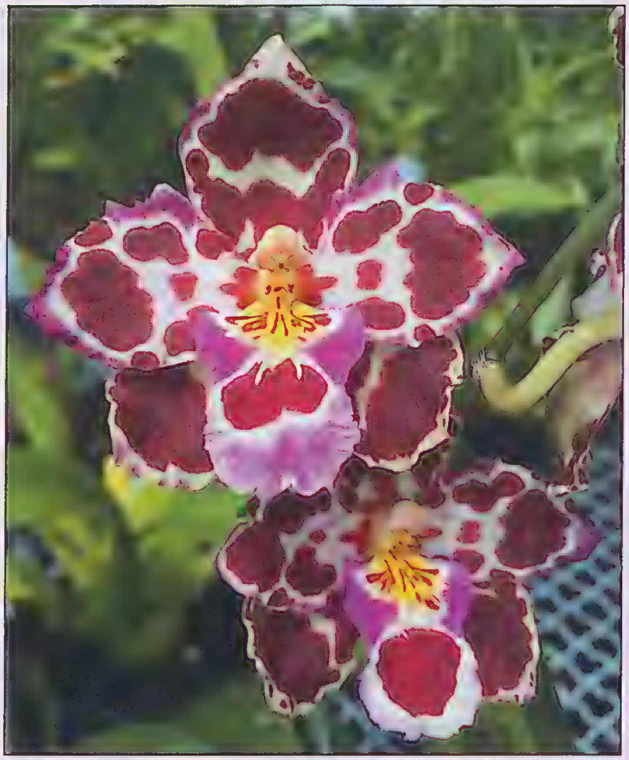
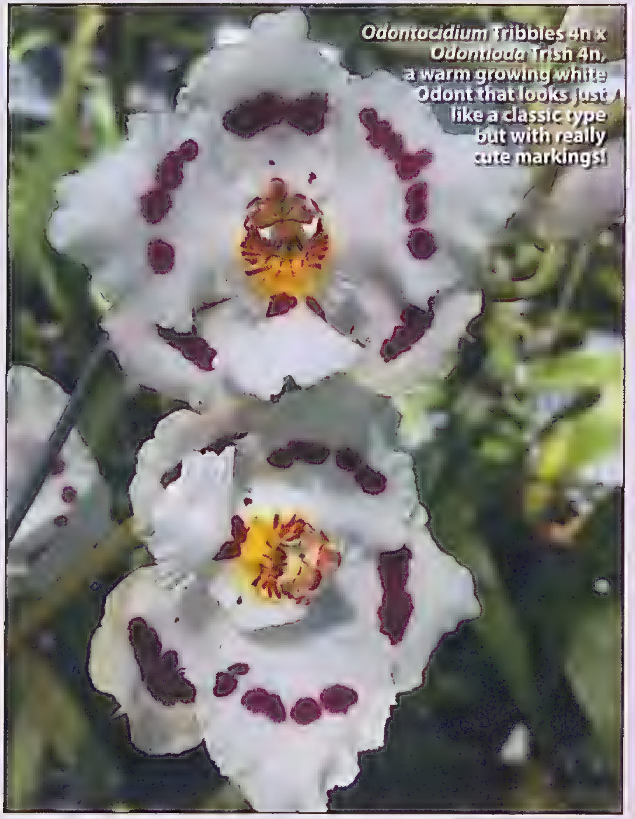
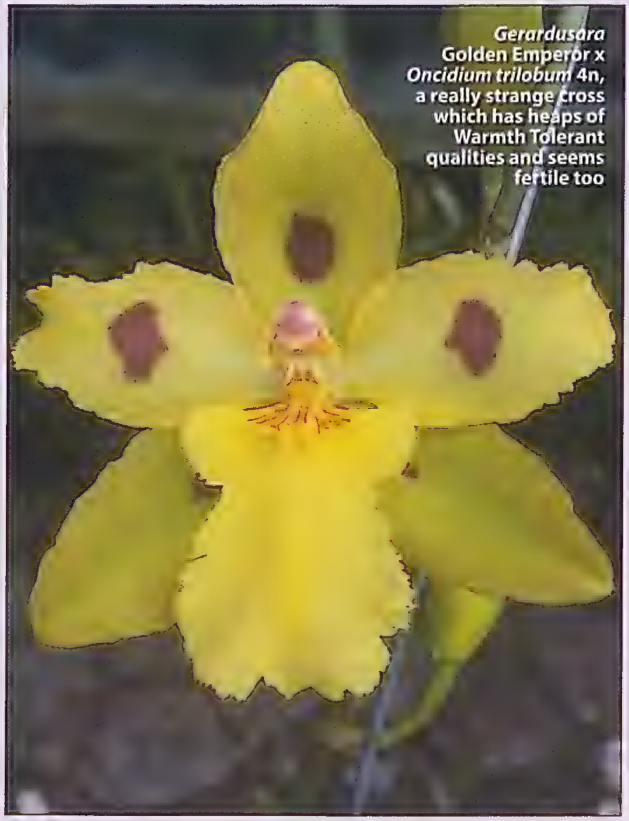




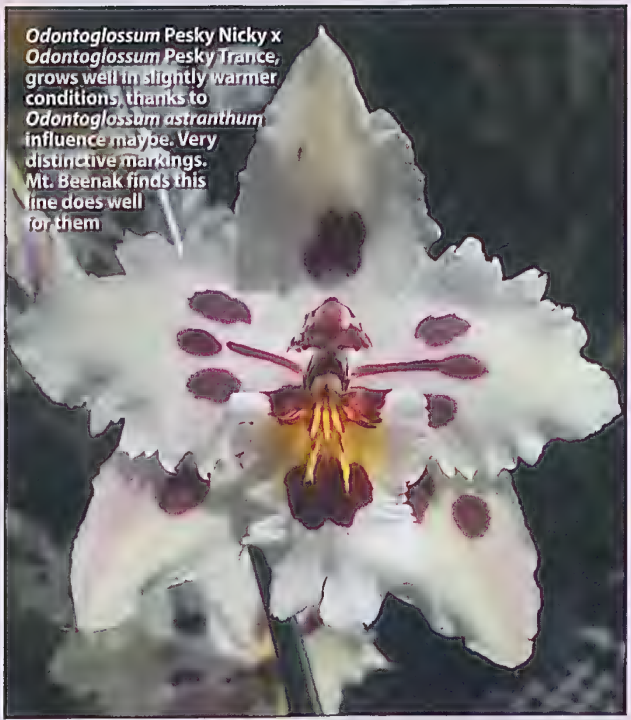
Upper Left and Above: Two pictures of selected ***Wilsonara*** **John Miller** seedlings. This is easily the best Warmth Tolerant advanced hybrid around. Very easy growers, colourful and fertile so one of the best future prospects for easy growing Intergenerics



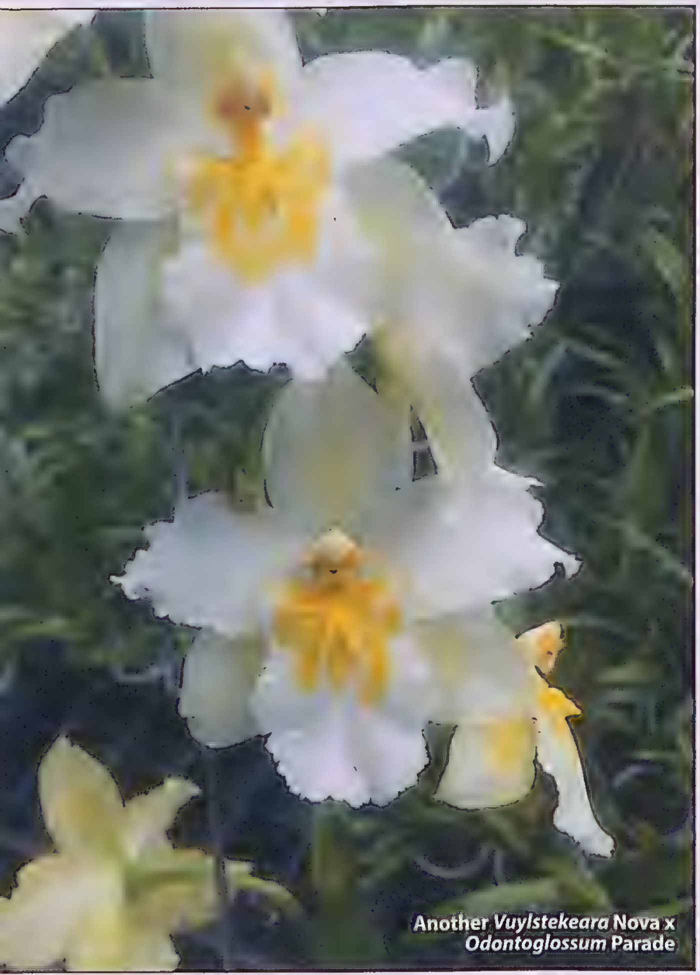
Odontocidium **Tribbles 4n x *Odontioda* Trish 4n, a warm growing white Odont that looks just like a classic type but with really cute markings!**



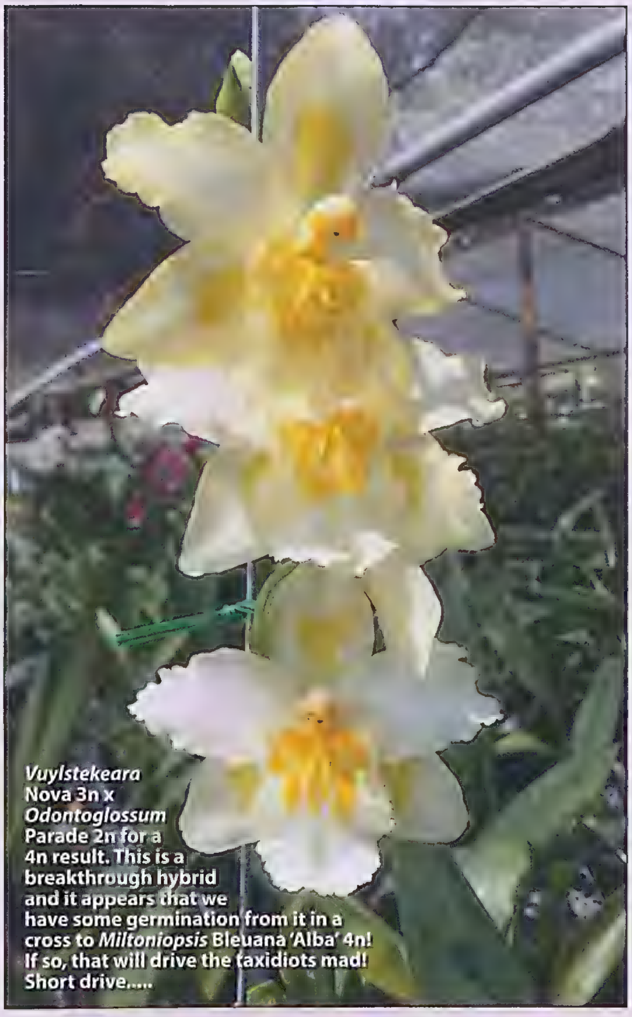
Gerardusara **Golden Emperor x *Oncidium trilobum* 4n, a really strange cross which has heaps of Warmth Tolerant qualities and seems fertile too**



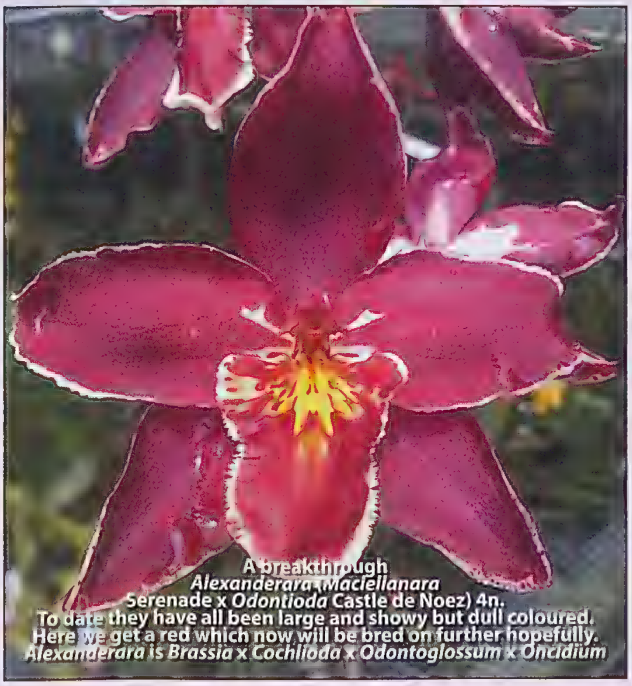
Odontoglossum Pesky Nicky x *Odontoglossum* Pesky Trance, grows well in slightly warmer conditions, thanks to *Odontoglossum astranthum* influence maybe. Very distinctive markings. Mt. Beenak finds this line does well for them



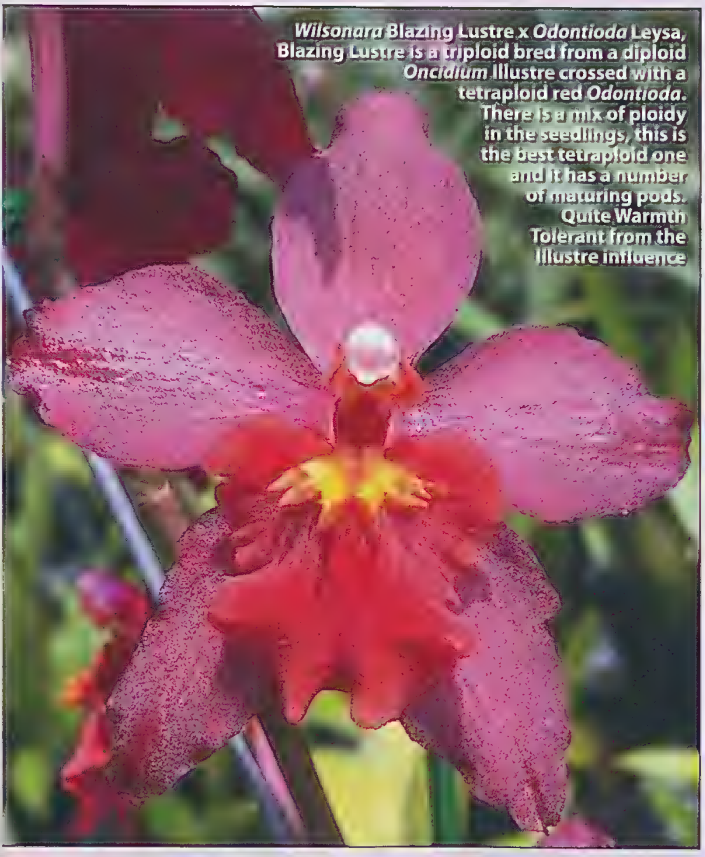
Another *Vuylstekeara* Nova x *Odontoglossum* Parade



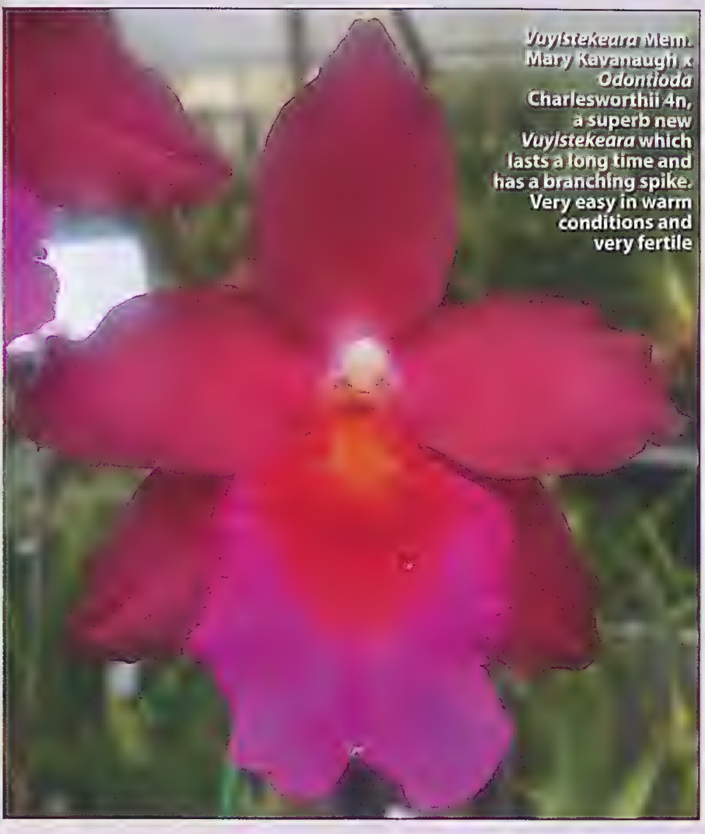
Vuylstekeara Nova 3n x *Odontoglossum* Parade 2n for a 4n result. This is a breakthrough hybrid and it appears that we have some germination from it in a cross to *Miltoniopsis* Bleuana 'Alba' 4n! If so, that will drive the taxidiots mad! Short drive.....



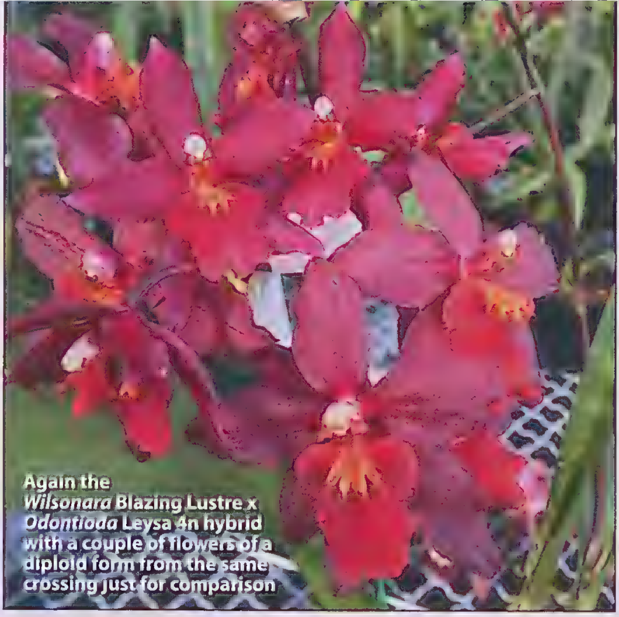
A breakthrough *Alexanderara* (*Maclellanara* Serenade x *Odontioda* Castle de Noez) 4n. To date they have all been large and showy but dull coloured. Here we get a red which now will be bred on further hopefully. *Alexanderara* is *Brassia* x *Cochlioda* x *Odontoglossum* x *Oncidium*



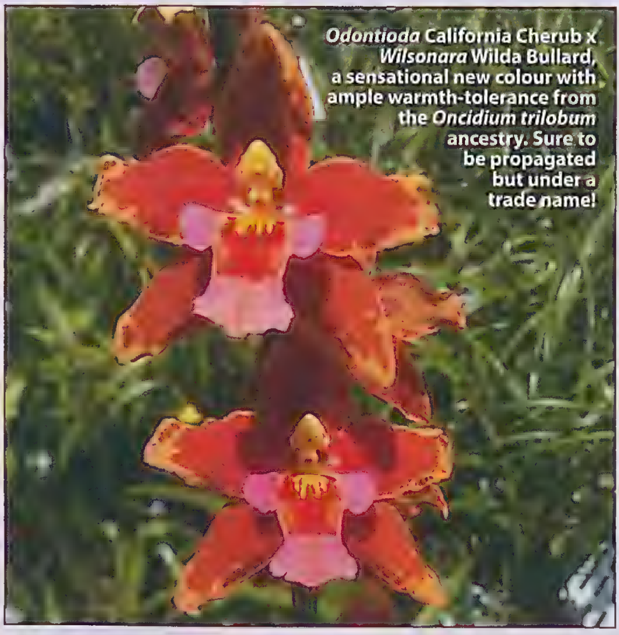
Wilsonara Blazing Lustre x *Odontioda* Leysa, Blazing Lustre is a triploid bred from a diploid *Oncidium* Illustre crossed with a tetraploid red *Odontioda*. There is a mix of ploidy in the seedlings, this is the best tetraploid one and it has a number of maturing pods. Quite Warmth Tolerant from the Illustre influence



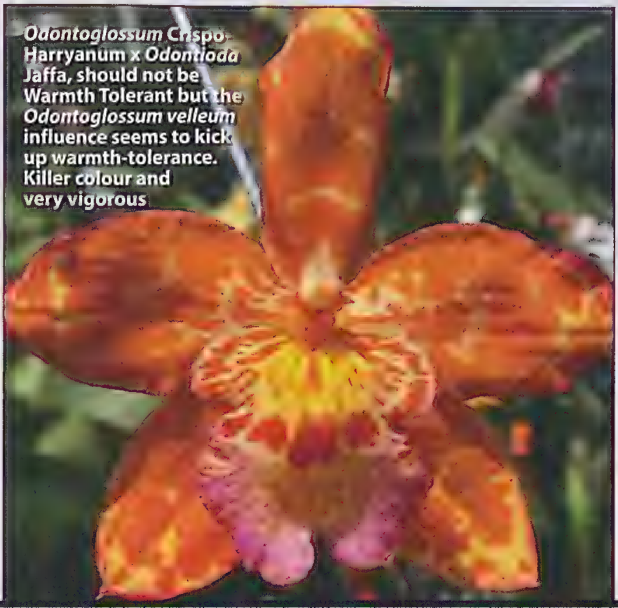
Vuylstekeara Mem. Mary Kavanaugh x *Odontioda* Charlesworthii 4n, a superb new *Vuylstekeara* which lasts a long time and has a branching spike. Very easy in warm conditions and very fertile



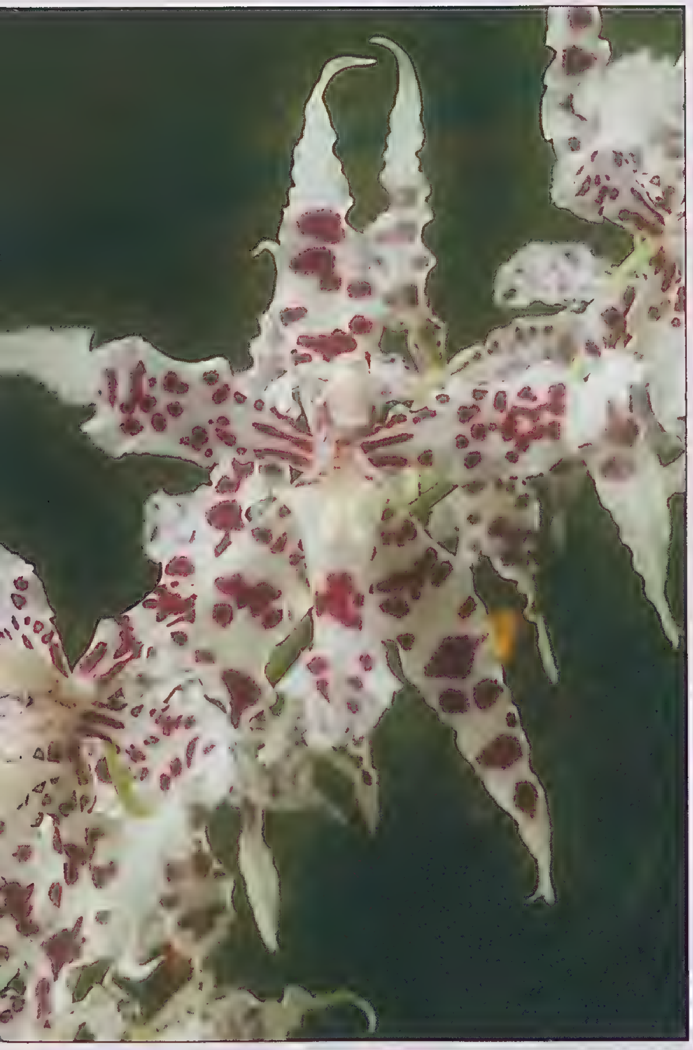
Again the *Wilsonara* Blazing Lustre x *Odontioda* Leysa 4n hybrid with a couple of flowers of a diploid form from the same crossing just for comparison

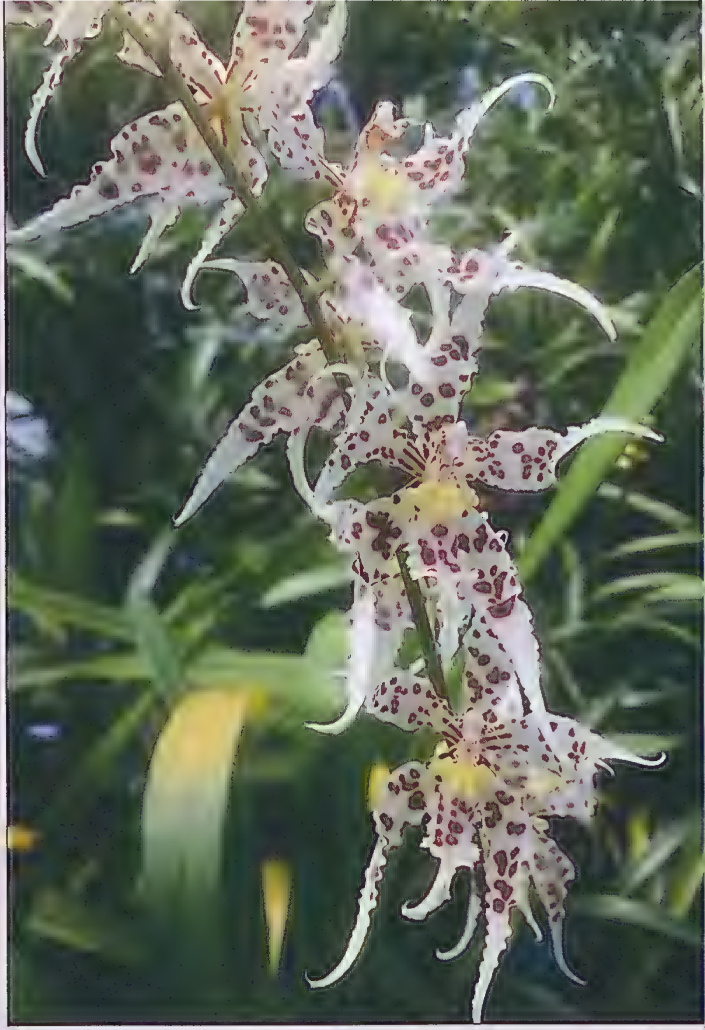


Odontioda California Cherub x *Wilsonara* Wilda Bullard, a sensational new colour with ample warmth-tolerance from the *Oncidium trilobum* ancestry. Sure to be propagated but under a trade name!

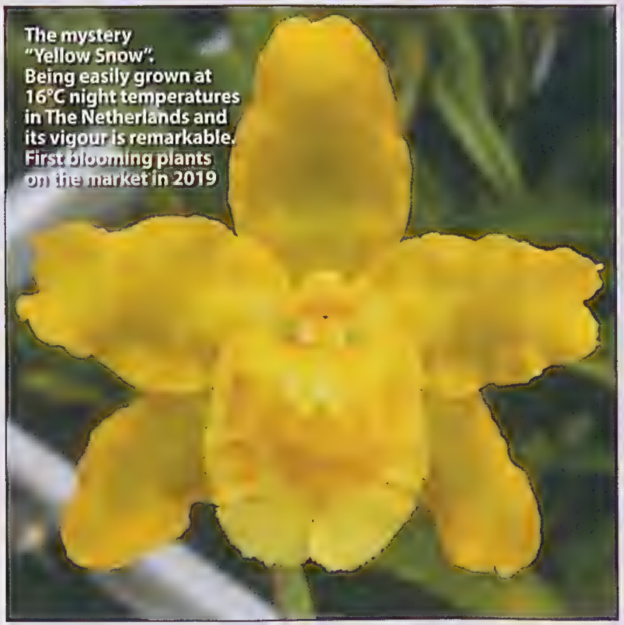


Odontoglossum Crispo-Harryanum x *Odontioda* Jaffa, should not be Warmth Tolerant but the *Odontoglossum velleum* influence seems to kick up warmth-tolerance. Killer colour and very vigorous





Left and Above: ***Odontoglossum naevium* x *Odontoglossum lucianianum***, two new first blooming seedlings which represent the first progeny from the very rare ***Odontoglossum lucianianum***. They seem to handle relatively warm conditions OK



The mystery "Yellow Snow". Being easily grown at 16°C night temperatures in The Netherlands and its vigour is remarkable. First blooming plants on the market in 2019

The indomitable Andy Easton in 2019 at his new home in Colombia

Coelogyne Kirribilli Ellen – a new Australian bred primary hybrid

Text and photos by David Banks

Kevin Dawes in Canberra has been interested in *Coelogyne* species and their hybrids for well over two decades. He has sourced plants from all over Australia and would easily have one of the most comprehensive collections of species and hybrid Coelogynes and related genera in Australia.

In recent times he set up the **www.coelogyne.com** website and also embarked on producing, growing and subsequently registering new *Coelogyne* hybrids. He has been an experimental hybridist, successfully putting some often very different combinations together.

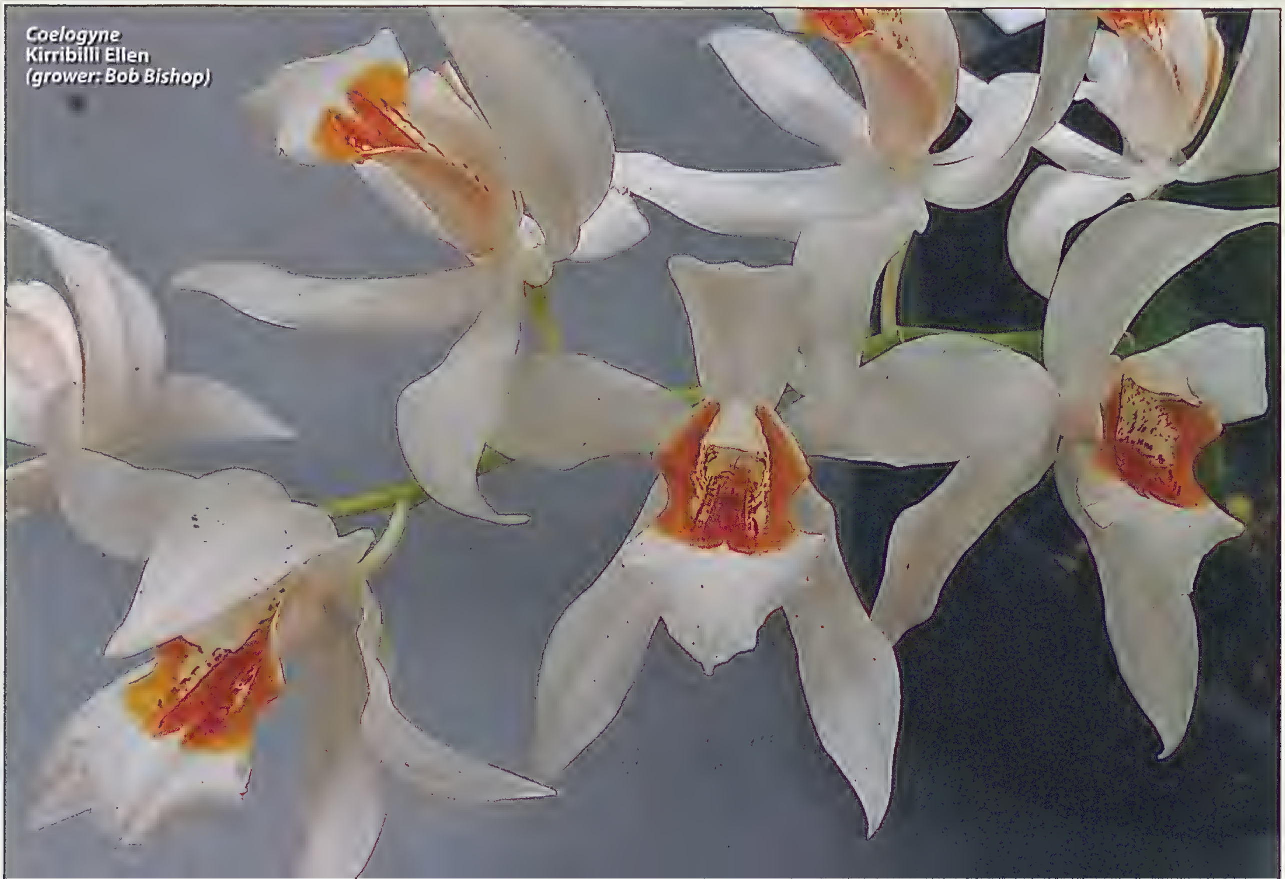
As of June 2019, Kevin Dawes has registered 31 different *Coelogyne* hybrids, all with the "Kirribilli" prefix. *Coelogyne* Kirribilli Ellen was registered with the RHS by Kevin in 2014 – the combination of *Coelogyne mooreana* × *Coelogyne assamica*.

Coelogyne mooreana from Vietnam is one of the jewels of the genus and is rightfully very popular in cultivation. The cultivar 'Brockhurst' gained a First Class Certificate and remains highly sought after today.

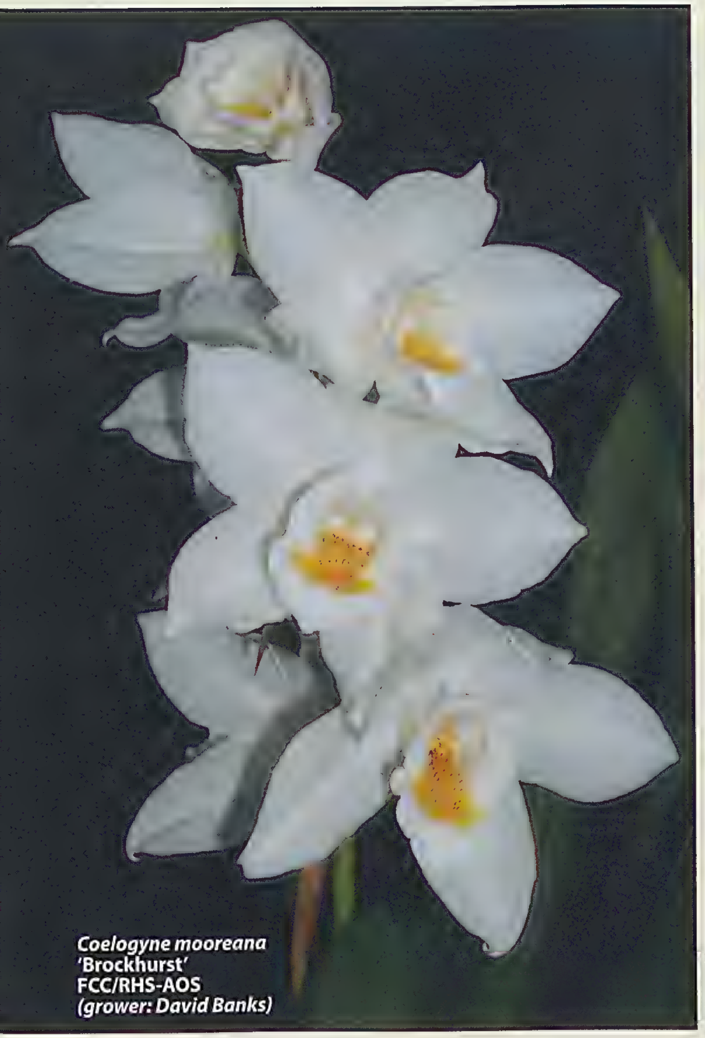
The other parent, *Coelogyne assamica,* first entered cultivation in Australia thanks to Ian Chalmers, who brought seed back from one of his orchidaceous visits to Vietnam well over 25 years ago. At the time all Ian knew was that it was a *Coelogyne,* so it wasn't until years later upon flowering that its true identity was revealed. Only recently has a darker flowered form of the species been imported, by Bill & Jan Miles of Orchid Species Plus in Victoria.

The hybrid is very vigorous and free flowering, combining the qualities of both parents. However, I really don't think there is a bad *Coelogyne mooreana* hybrid anyway! ■

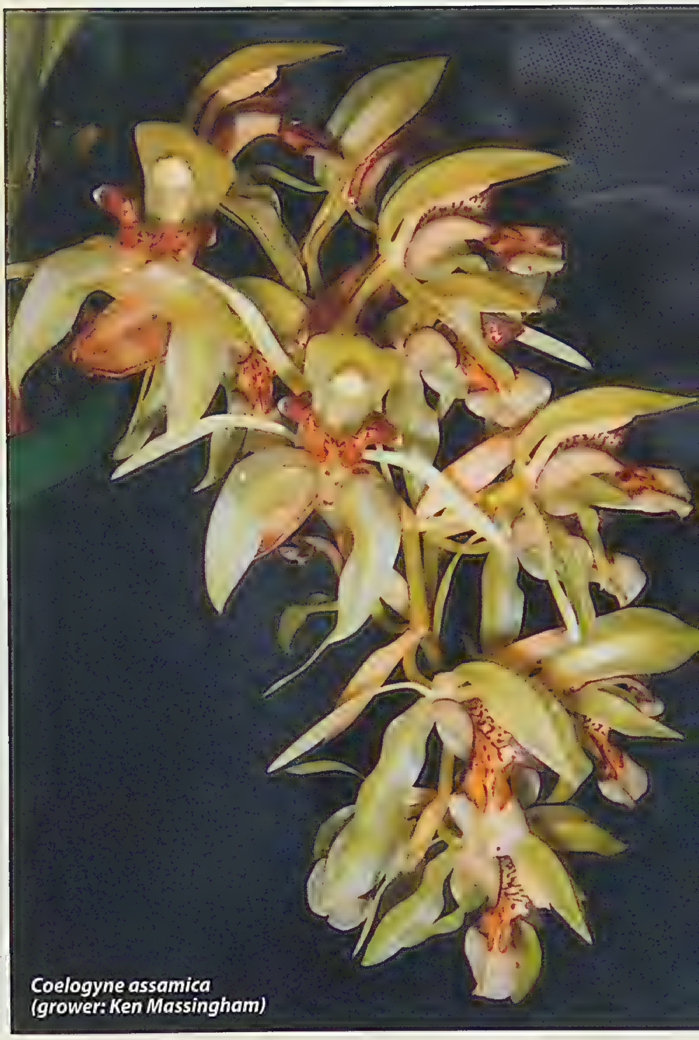
David Banks
Email: david@hillsdistrictorchids.com



***Coelogyne* Kirribilli Ellen (grower: Bob Bishop)**



***Coelogyne mooreana* 'Brockhurst' FCC/RHS-AOS (grower: David Banks)**



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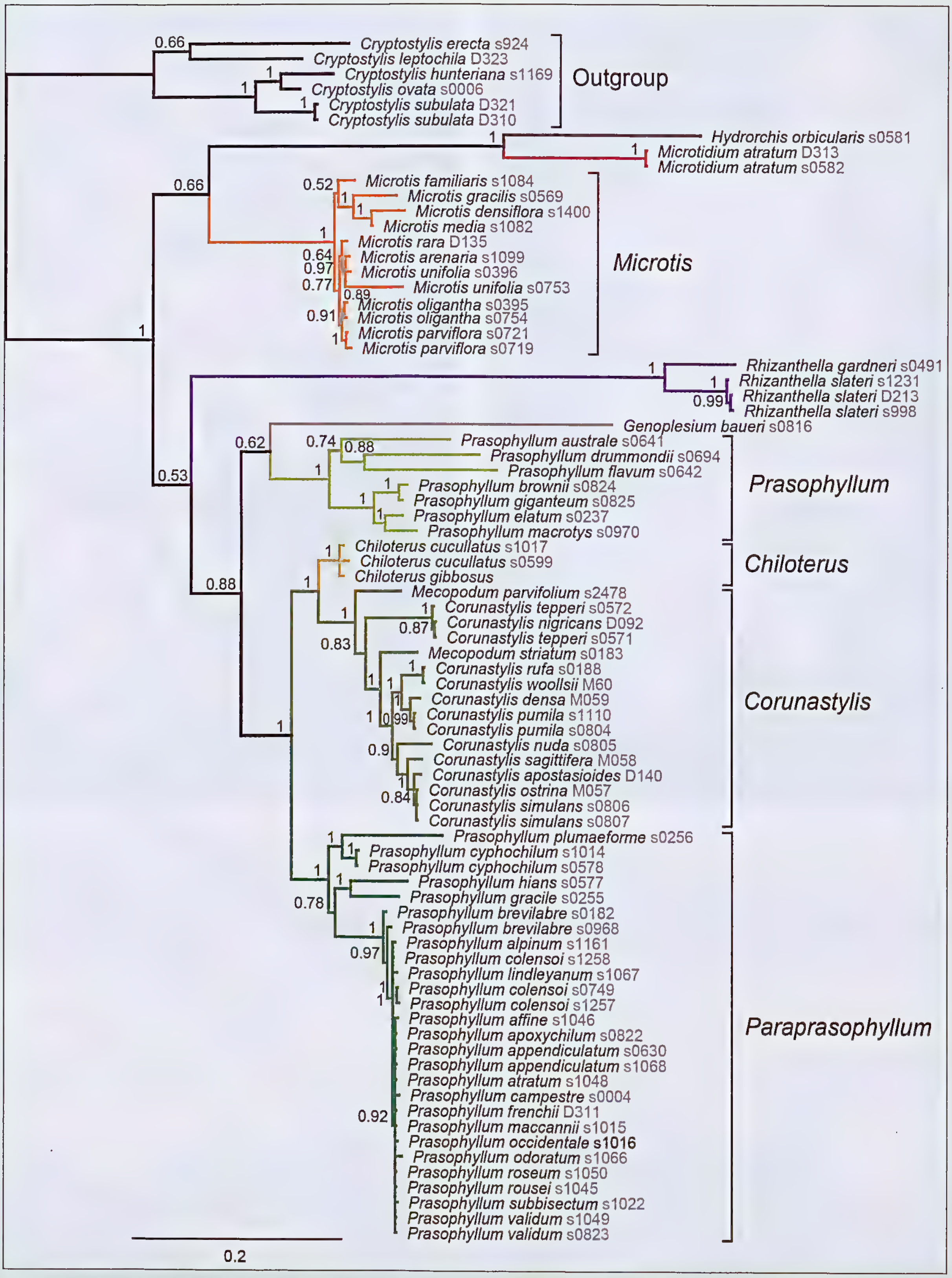
Cryptostylis erecta s924
Cryptostylis leptochila D323
Cryptostylis hunteriana s1169
Cryptostylis ovata s0006
Cryptostylis subulata D321
Cryptostylis subulata D310
Outgroup
Hydrorchis orbicularis s0581
Microtidium atratum D313
Microtidium atratum s0582
Microtis familiaris s1084
Microtis gracilis s0569
Microtis densiflora s1400
Microtis media s1082
Microtis rara D135
Microtis arenaria s1099
Microtis unifolia s0396
Microtis unifolia s0753
Microtis oligantha s0395
Microtis oligantha s0754
Microtis parviflora s0721
Microtis parviflora s0719
Microtis
Rhizanthella gardneri s0491
Rhizanthella slateri s1231
Rhizanthella slateri D213
Rhizanthella slateri s998
Genoplesium baueri s0816
Prasophyllum australe s0641
Prasophyllum drummondii s0694
Prasophyllum flavum s0642
Prasophyllum brownii s0824
Prasophyllum giganteum s0825
Prasophyllum elatum s0237
Prasophyllum macrotys s0970
Prasophyllum
Chiloterus cucullatus s1017
Chiloterus cucullatus s0599
Chiloterus gibbosus
Chiloterus
Mecopodum parvifolium s2478
Corunastylis tepperi s0572
Corunastylis nigricans D092
Corunastylis tepperi s0571
Mecopodum striatum s0183
Corunastylis rufa s0188
Corunastylis woollsii M60
Corunastylis densa M059
Corunastylis pumila s1110
Corunastylis pumila s0804
Corunastylis nuda s0805
Corunastylis sagittifera M058
Corunastylis apostasioides D140
Corunastylis ostrina M057
Corunastylis simulans s0806
Corunastylis simulans s0807
Corunastylis
Prasophyllum plumaeforme s0256
Prasophyllum cyphochilum s1014
Prasophyllum cyphochilum s0578
Prasophyllum hians s0577
Prasophyllum gracile s0255
Prasophyllum brevilabre s0182
Prasophyllum brevilabre s0968
Prasophyllum alpinum s1161
Prasophyllum colensoi s1258
Prasophyllum lindleyanum s1067
Prasophyllum colensoi s0749
Prasophyllum colensoi s1257
Prasophyllum affine s1046
Prasophyllum apoxychilum s0822
Prasophyllum appendiculatum s0630
Prasophyllum appendiculatum s1068
Prasophyllum atratum s1048
Prasophyllum campestre s0004
Prasophyllum frenchii D311
Prasophyllum maccannii s1015
Prasophyllum occidentale s1016
Prasophyllum odoratum s1066
Prasophyllum roseum s1050
Prasophyllum rousei s1045
Prasophyllum subbisectum s1022
Prasophyllum validum s1049
Prasophyllum validum s0823
Paraprasophyllum
0.2

Fig. 1. Prasophyllinae Bayesian tree with branch lengths
Topologies of the Bayesian consensus tree with branch lengths. Numbers above branches indicate the Bayesian posterior probability followed by bootstrap values generated by parsimony. Taxonomic names demarcated on the right indicate new taxonomy described here.

Notes on Australasian Orchids 5: *Paraprasophyllum*, a new genus in Prasophyllinae (Diurideae)

by Mark A. Clements and David L. Jones

Abstract

Results from molecular analysis using a single (ITS) and multigene analyses of 81 collections representative of all major groups within Prasophyllinae provided strong evidence for a reassessment of the taxonomic status of taxa within the subtribe. Both *Mecopodum* and *Prasophyllum* are revealed as non-monophyletic. Eight morphologically distinct monophyletic groups were identified and are here treated at generic rank: i) *Rhizanthella* R.S.Rogers (4 species); ii) *Hydrorchis* D.L.Jones & M.A.Clem. (3 species); iii) *Microtis* R.Br. (27 species); iv) *Prasophyllum* R.Br., s.str. (13 species); v) *Genoplesium* R.Br. (1 sp.); vi) *Chiloterus* D.L.Jones & M.A.Clem. (3 species); vii) *Corunastylis* Fitzg. (72 species) and viii) identified as "intermediate" *Prasophyllum* species comprising 126 species is here described in new genus *Paraprasophyllum*. All necessary transfers and nomenclatural changes are made to consolidate the findings of this research.

Introduction

The taxonomic and nomenclatural status of a group of Australian terrestrial orchids with the common character of terete leaves, *Prasophyllum* R.Br., *Genoplesium* R.Br. and *Microtis* R.Br., *Corunastylis* Fitzg., *Microtidium* D.L.Jones & M.A.Clem., *Hydrorchis* D.L.Jones & M.A.Clem., *Mecopodum* D.L.Jones & M.A.Clem. and *Chiloterus* D.L.Jones & M.A.Clem. has proved controversial. Many authors have not accepted these most recent proposed changes preferring instead to adhere to the more traditional interpretations of the first three described genera, whilst others steadfastly refuse to accept the recognition of *Corunastylis* being a separate taxon to *Genoplesium* despite genetic evidence to the contrary.

Although there have been several molecular based studies undertaken generated from both plastid *rbc*L (Kores *et al.*, 1997; Cameron *et al.*, 1999), *mat*K and *trn*L-F plastid genes (Kores *et al.*, 2000, 2001), *psaB* (Cameron 2004), and the ITS nuclear ribosomal DNA regions (Clements *et al*, 2002) these have concentrated on the higher classification position of the group rather than the internal relationships. To address this problem a preliminary analysis was undertaken based 81 collections that comprehensively are representative of the group using data from ITS nuclear ribosomal DNA regions (Clements and Millar, unpubl.). A tree based on the results generated from that study is reproduced here (Fig. 1). A multigene analysis using both nuclear and plastid gene region sequence data coupled with analysis of morphological characters and states Nargar *et al.* (in prep.) of the same representative plus additional samples from the group confirm the basic alignment and structure within the group. These studies will be published elsewhere.

Results from these molecular analysis using a single (ITS) and multigene analyses of 81 collections representative of all major groups within Prasophyllinae provided strong evidence for a reassessment of the taxonomic status of taxa within the subtribe. Both *Mecopodum* and *Prasophyllum* are revealed as non-monophyletic. Eight morphologically distinct monophyletic groups were identified and are here treated at generic rank: i) *Rhizanthella* R.S.Rogers (4 species); ii) *Hydrorchis* D.L.Jones & M.A.Clem. (3 species); iii) *Microtis* R.Br. (27 species); iv) *Prasophyllum* R.Br., s.str. (13 species); v) *Genoplesium* R.Br. (1 sp.); vi) *Chiloterus* D.L.Jones & M.A.Clem. (3 species); vii) *Corunastylis* Fitzg. (72 species) and viii) identified as "intermediate" *Prasophyllum* species comprising 126 species. In order to avoid any further confusion, misplacement or inappropriate treatment of taxa in the various genera we present here a re-classification of the Prasophyllinae including the description of a new genus *Paraprasophyllum* to accommodate species in the "intermediate" group of *Prasophyllum*. All necessary transfers and nomenclatural changes are made to consolidate the findings of this research. This also facilitates the description of new taxa in the appropriate genera.

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TAXONOMY

PRASOPHYLLINAE Schltr., *Bot. Jahrb. Syst.* 45:381 (1911). Type: *Prasophyllum* R.Br.

Rhizanthellinae R.S. Rogers, *J. Roy. Soc. West Australia* 15: 4 (1928). Type: *Rhizanthella gardneri* R.S.Rogers, ***syn. nov.***

Microtideae Szlach., *Fragm. Flor. Geobot.* 36(1): 36 (1991). Type: *Microtis* R.Br.

Microtidinae (Szlach.) Szlach., *Fragm. Flor. Geobot. Suppl.* 3: 20 (1995). Type: *Microtis* R.Br.

Microtideae subtribe *Prasophyllinae* (Schltr.) Szlach., *Pol. Bot. J.* 46(1): 12 (2001).

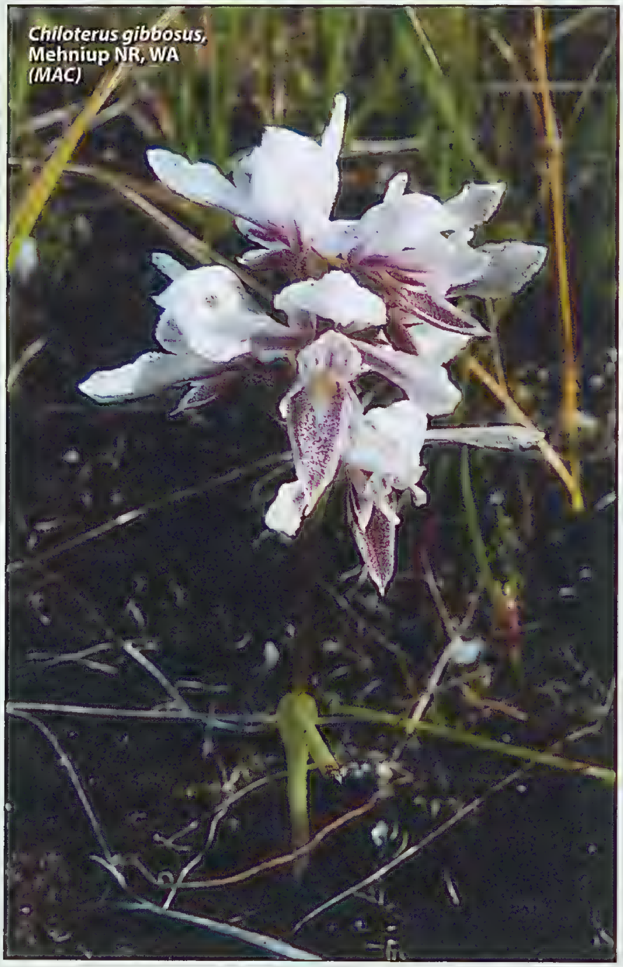
Chiloterus D.L.Jones et M.A.Clem., *Orchadian* 14(8); Suppl. xiii (2004). Type species: *Prasophyllum cucullatum* Rchb.f.

Prasophyllum Sect. *Podochilus* Benth., *Fl. Austral.* 6: 336, 341 (1873); Pfitzer in Engl. & Prantl, *Pflanzenf.* II, 6: 101 (1889). Type species: *Prasophyllum gibbosum* R. Br. (here designated).

A genus of two described and two possible undescribed species endemic to the south-west of Western Australia.

Chiloterus cucullatus (Rchb.f.) D.L.Jones et M.A.Clem., *Orchadian* 14(8): Suppl. xiii (2004).

Chiloterus gibbosus (R.Br.) D.L.Jones et M.A.Clem., *Orchadian* 14(8): Suppl. xiii (2004).



***Chiloterus gibbosus*, Mehniup NR, WA (*MAC*)**

Corunastylis Fitzg., *Austral. Orch.* 2(3): [t. 1] (1888). Type species: *Corunastylis apostasioides* Fitzg.

Anticheirostylis Fitzg., *Austral. Orch.* 2(4): back cover (Mar. 1888), *nom. illeg., superfl.*

Antichirostylis Kuntze in Post & Kuntze, *Lex. gen. Phan.* 36 (1903), *orth. var.*

Prasophyllum Sect. *Bifida* G. Don in Loudon's, *Hortus Britannicus* 369 (1830). Type: *Prasophyllum rufum* R. Br. (*vide* Jones & Clements 1989).

Prasophyllum Sect. *Genoplesium* Hook.f., Fl. Tasm. 2: 10 (1858); Benth., *Fl. Austral..* 6: 335 (1873); Pfitzer in Engl. & Prantl, *Pflanzenf.* II, 6: 101 (1889). Type: *Prasophyllum brachystachyum* Lindl.

Mecopodum D.L.Jones et M.A.Clem., *Orchadian* 14(8): Sci. Suppl. xiv (2004). Type species: *Prasophyllum parvifolium* Lindl., ***syn. nov.***

Prasophyllum Sect. *Micranthum* Rupp, *Victorian Naturalist* 66: 75-79 (1949), *nom. illeg. superfl.*

Genoplesium subgen. *Corunastylis* (Fitzg.) Szlach., *Richardiana* 3(2): 98 (2003), ***syn. nov.***

Genoplesium Sect. *Plesiogenum* Szlach., *Pol. Bot. J.* 46(1): 12 (2001). Type species: *Genoplesium citriodorum* D.L.Jones et M.A.Clem.

A genus of 71 species mainly distributed in eastern and southern Australia with two species in New Zealand and one in New Caledonia.

Corunastylis acuminata (R.S.Rogers) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 460 (2002).

Corunastylis albiglans (Rupp) D.L.Jones et M.A.Clem., *Australian Orchid Review* 83(1): 52 (2018).

Corunastylis alticola (D.L.Jones) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 460 (2002).

Corunastylis ansata (Fitzg.) D.L.Jones et M.A.Clem., *Australian Orchid Review* 83(1): 52 (2018).

Corunastylis anthracina D.L.Jones, *Austral. Orchid. Res.* 5: 74, f. 3.8 (21 Dec. 2006).

Corunastylis apostasioides Fitzg., *Austral. Orch.* 2(3): [t. 1] (1888).

Corunastylis archeri (Hook.f.) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 460 (2002).

Corunastylis arrecta (D.L.Jones) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 460 (2002).

Corunastylis bishopii (D.L.Jones) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 460 (2002).

Corunastylis brachystachya (Lindl.) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 460 (2002).

Corunastylis caloptera (Rchb.f.) M.A.Clem. et D.L.Jones, ***comb nov.*** Basionym: *Prasophyllum calopterum* Rchb.f., *Linnaea* 41: 57 (1876).

Corunastylis capparina D.L.Jones, *Australian Orchid Review* 81(6): 36-39, t.,f. (2016)

Corunastylis carecta D.L.Jones et L.M.Copel., *Orchadian* 17(8): 371-373, f. 1 (2013)

Corunastylis ciliata (Ewart et B. Rees) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 460 (2002).

Corunastylis citriodora (D.L.Jones) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 460 (2002).

Corunastylis clivicola D.L.Jones, *Orchadian* 15(7): 322-323, f. 1 (2007).

Corunastylis conferta (D.L.Jones) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 460 (2002).

Corunastylis cornuta D.L.Jones, *Orchadian* 15(12): 547, 550, t. (June 2008).

Corunastylis cranei (D.L.Jones) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 460 (2002).

Corunastylis cuspidata D.L.Jones & L.M.Copel., *Australian Orchid Review* 82(6): 54-56, t. (2017).

Corunastylis densa (Fitzg.) D.L.Jones et M.A.Clem., *Orchadian* 15(1): 37 (2005).

Corunastylis despectans (Hook.f.) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 460 (2002).

Corunastylis ectopa (D.L.Jones) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 460 (2002).

Corunastylis filiformis (Fitzg.) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 460 (2002).

Corunastylis fimbriata (R.Br.) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 460 (2002).

Corunastylis firthii (L.Cady) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 461 (2002).

Corunastylis formosa (D.L.Jones) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 461 (2002).

Corunastylis fuscoviridis (Reader) D.L.Jones et M.A.Clem., *Australian Orchid Review* 83(1): 53-54 (2018).

Corunastylis insignis (D.L.Jones) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 461 (2002).

Corunastylis laminata (Fitzg.) D.L.Jones et M.A.Clem., *Orchadian* 14(8): Sci. Suppl. xiii (June 2004).

Corunastylis leptochila D.L.Jones, *Australian Orchid Review* 82(5): 50-53, t., f. (2017).

Corunastylis littoralis (D.L.Jones) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 461 (2002).

Corunastylis longisepala (Fitzg.) D.L.Jones et M.A.Clem., *Australian Orchid Review* 83(1): 55 (2018).

Corunastylis mollissima (Rupp) D.L.Jones et M.A.Clem., *Australian Orchid Review* 83(1): 55 (2018).

Corunastylis morina (D.L.Jones) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 461 (2002).

Corunastylis morrisii (Nicholls) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 461 (2002).

Corunastylis mucronata (Rupp) D.L.Jones, *Australian Orchid Review* 82(3): 63 (2017).

Corunastylis nichollsiana (Rupp) D.L.Jones et M.A.Clem., *Australian Orchid Review* 83(1): 55 (2018).

Corunastylis nigricans (R.Br.) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 461 (2002).

Corunastylis nublingii (R.S.Rogers) D.L.Jones et M.A.Clem., *Australian Orchid Review* 83(1): 56 (2018).

Corunastylis nuda (Hook.f.) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 461 (2002).

Corunastylis nudiscapa (D.L.Jones) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 461 (2002).

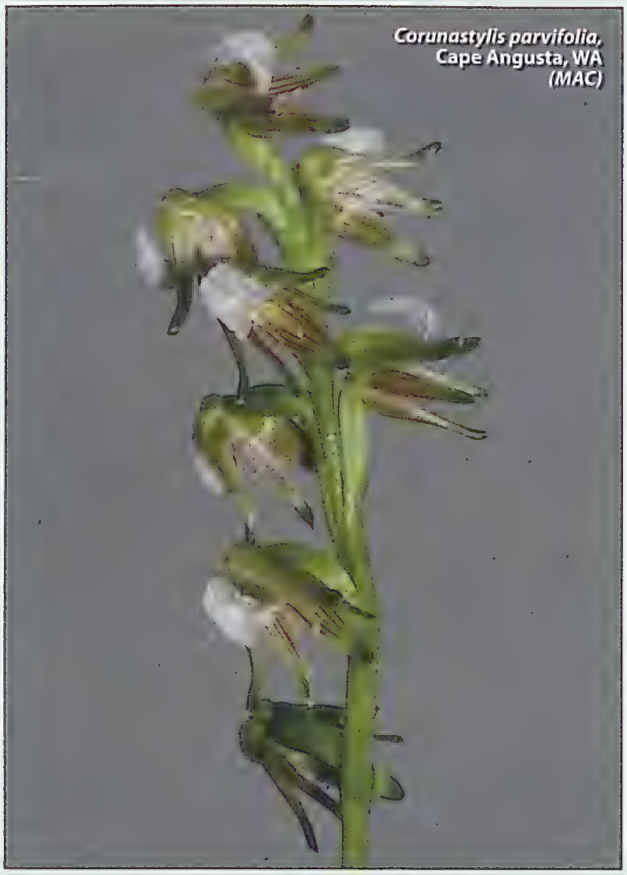
Corunastylis obovata (Rupp) D.L.Jones, *Australian Orchid Review* 82(3): 63 (2017).

Corunastylis oligantha (D.L.Jones) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 461 (2002).

Corunastylis ostrina (D.L.Jones) D.L.Jones et M.A.Clem., *Orchadian* 13(11): 502 (2002).

Corunastylis parvicalla (Rupp) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 461 (2002).

Corunastylis parvifolia (Lindl.) M.A.Clem. et D.L.Jones, ***comb nov.*** Basionym: *Prasophyllum parvifolium* Lindl.in *Edwards's, Bot. Reg.* 1-23: Swan Riv. Append. liv (1840).


Corunastylis parvifolia, Cape Angusta, WA (MAC)

Corunastylis pedersonii (D.L.Jones) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 461 (2002).

Corunastylis plumosa (Rupp) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 461 (2002).

Corunastylis psammophila (D.L.Jones) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 461 (2002).

Corunastylis pumila (Hook.f.) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 461 (2002).

Corunastylis reflexa (Fitzg.) D.L.Jones et M.A.Clem., *Australian Orchid Review* 83(1): 56 (2018).

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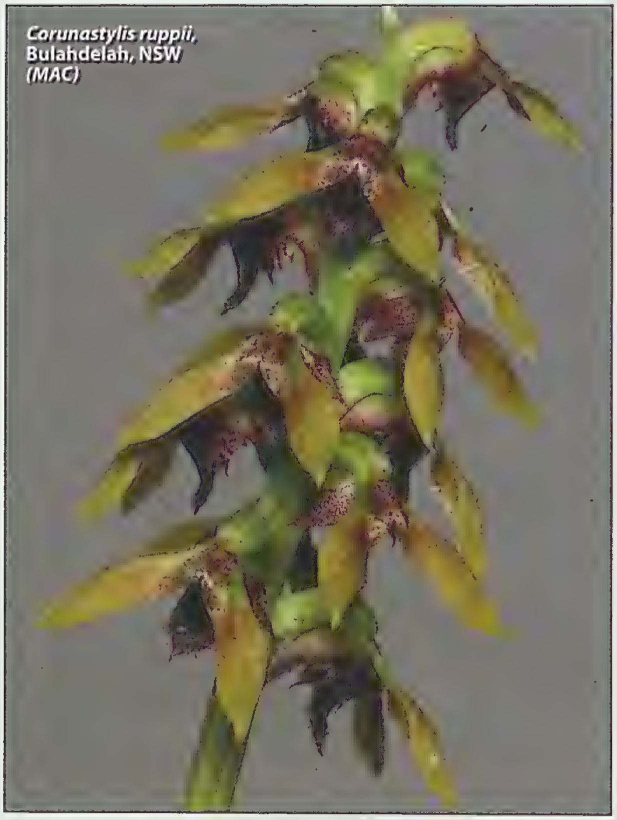
Corunastylis rhyolitica (D.L.Jones et M.A. Clem) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 461 (2002).

Corunastylis rufa (R.Br.) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 461 (2002).

Corunastylis ruppii (R.S.Rogers) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 461 (2002).



Corunastylis ruppii, Bulahdelah, NSW (MAC)

Corunastylis sagittifera (Rupp) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 461 (2002).

Corunastylis sigmoidea (D.L.Jones) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 461 (2002).

Corunastylis simulans (D.L.Jones) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 461 (2002).

Corunastylis stephensonii D.L.Jones, *Australian Orchid Review* 78(3): 50-55, t., f. (2013).

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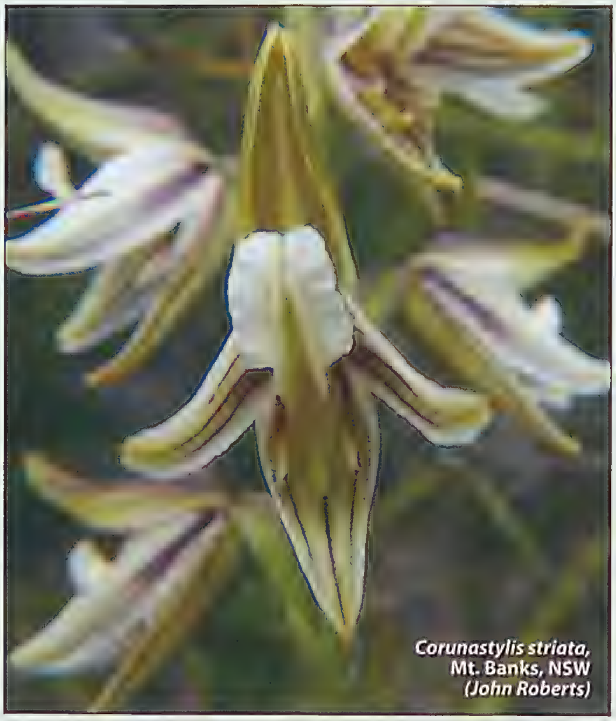
Corunastylis striata (R.Br.) M.A.Clem. et D.L.Jones, ***comb nov.*** Basionym: *Prasophyllum striatum* R.Br., *Prod.* 318 (1810).



Corunastylis striata, Mt. Banks, NSW (John Roberts)

Corunastylis superba (D.L.Jones) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 462 (2002).

Corunastylis systena (D.L.Jones) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 462 (2002).

Corunastylis tasmanica (D.L.Jones) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 462 (2002).

Corunastylis tecta (D.L.Jones) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 462 (2002).

Corunastylis tenella D.L.Jones & L.M.Copel., *Orchadian* 17: 423-425, f. 1-2 (2013).

Corunastylis trifida (Rupp) D.L.Jones et M.A.Clem., *Orchadian* 14(8): Sci. Suppl. xiii (June 2004).

Corunastylis turfosa (D.L.Jones) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 462 (2002).

Corunastylis unica (Rupp) D.L.Jones, *Australian Orchid Review* 82(3): 63 (2017).

Corunastylis valida (D.L.Jones) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 462 (2002).

Corunastylis vernalis (D.L.Jones) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 462 (2002).

Corunastylis woollsii (F.Muell.) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 462 (2002).

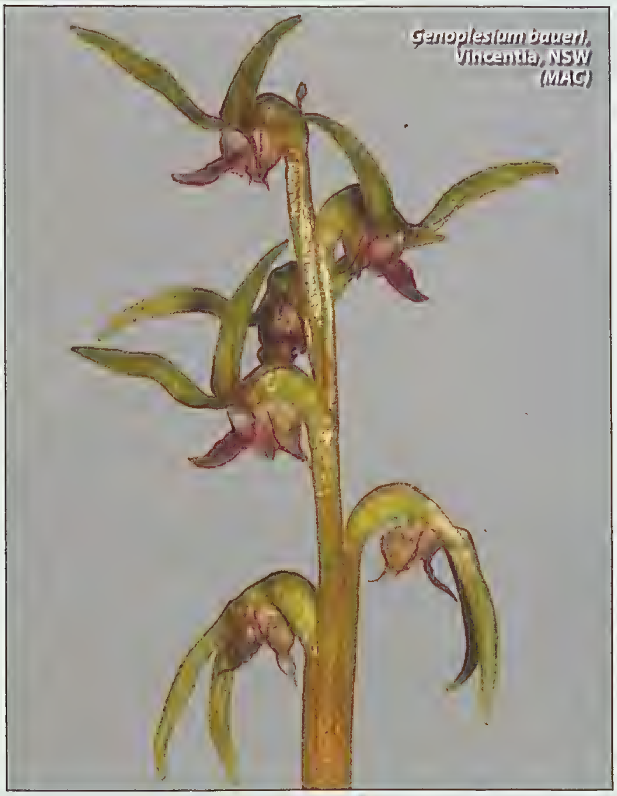
Genoplesium R.Br., Prod. 319 (1810). Type species: *Genoplesium baueri* R.Br.

Prasophyllum Sect. *Genoplesium* Benth., *Flora Austral.* 6: 336, 341 (1873).

Genoplesium Sect. *Genoplesium* Szlach., *Pol. Bot. J.* 46(1): 12 (2001).

A monospecific genus confined to eastern Australia.

Genoplesium baueri R.Br., *Prod.* 310 (1810).


Genoplesium baueri, Vincentia, NSW (MAC)

Hydrorchis D.L.Jones et M.A.Clem., Orchadian 13: 462 (2002). Type species: *Microtis orbicularis* R.S.Rogers.

Microtis subgen. *Holocrotis* Szlach., *Pol. Bot. J.* 46(1): 12 (2001), ***syn. nov.*** Type species: *Microtis orbicularis* R.S.Rogers

Microtidium D.L.Jones et M.A.Clem., *Orchadian* 13(10): 463 (30 Jan. 2002). Type species: *Microtis atrata* Lindl.

Microtidium subgen. *Holocrotis* (Szlach.) Szlach., *Richardiana* 3(2): 98 (2003), ***syn. nov.***

A genus of three described and possibly one undescribed species from southern Australia.

Hydrorchis atratum (Lindl.) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Microtidium atratum* (Lindl.) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 463 (30 Jan. 2002).

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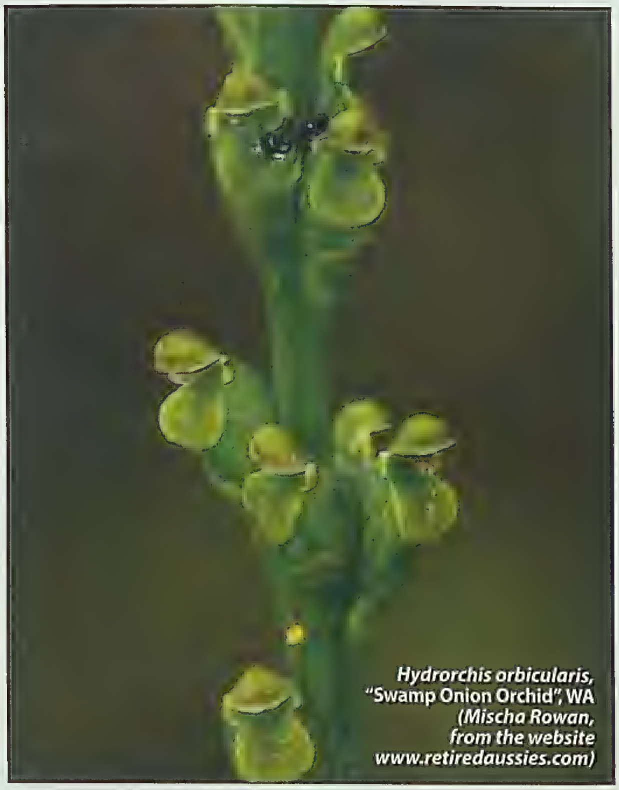
Hydrorchis cupularis D.L.Jones et G.Brockman, *Orchadian* 14(11): 518-519, f. 1, t. (2005).

Hydrorchis orbicularis (R.S.Rogers) D.L.Jones et M.A.Clem., *Orchadian* 13(10): 462 (2002).


Hydrorchis orbicularis, "Swamp Onion Orchid", WA (Mischa Rowan, from the website www.retiredaussies.com)

Microtis R.Br., Prod. 320 (1810). Type species: *Microtis rara* R.Br., *vide* Garay & H.R.Sweet (1974).

Goadbyella R.S.Rogers, *Trans. & Proc. Roy. Soc. South Australia* 51: 294 (1927). Type: *Goadbyella gracilis* R.S.Rogers.

Microtis subgen. *Microtis* Szlach., *Pol. Bot. J.* 46(1): 12 (2001).

A genus of *c.* 30 described species mainly from southern and eastern Australia but also New Zealand, New Caledonia with sporadic occurrences throughout the Malay Archipelago and eastern areas of SE Asia as far north as Japan.

Microtis aemula Schltr., *Bot. Jahrb. Syst.* 39: 37 (1906).

Microtis alba R.Br., *Prod.* 321 (1810).

Microtis angusii D.L.Jones, *Orchadian* 12(1): 10-11, f. (1996).

Microtis arenaria Lindl., *Gen. sp. orchid.* pl. 396 (1840).

Microtis benthamiana Rchb.f., Beitr. *Syst. Pflanzenk.*: 24-25 (1871).

Microtis biloba Nicholls, *Victorian Naturalist* 66: 93, f. J-L (1949).

Microtis bipulvinaris Nicholls, *Victorian Naturalist* 66: 92-94, f. A-F (1949).

Microtis brownii Rchb.f., Beitr. *Syst. Pflanzenk.* 24 (1871).

Microtis densiflora (Benth.) M.A.Clem., *Austral. Orch. Res.* 1: 94 (1989).

Microtis eremaea R.J.Bates, *J. Adelaide Bot. Gard.* 17: 119-120, f. 1A-E (1996).

Microtis eremicola (R.J.Bates) D.L.Jones et M.A.Clem., *Orchadian* 14(8): Sci. Suppl. xiv (June 2004).

Microtis familiaris R.J.Bates, *J. Adel. Bot. Gard.* 13: 50-51, f. 1 (1990).

Microtis formosana Schltr. ex Masam., *Sci. Rep. Kanazawa Univ., Biol.* 9: 122 (1964).

Microtis frutetorum Schldl., *Linnaea* 20: 568 (1847).

Microtis globula R.J.Bates, *J. Adelaide Bot. Gard.* 7 (1): 60-62, f. 3, 6C (1984).

Microtis gracilenta R.J.Bates, *Orchadian* 18: 289 (2015).

Microtis gracilis (R.S.Rogers) M.A.Clem., D.L.Jones et C.J.French, ***comb. nov.*** Basionym: *Goadbyella gracilis* R.S. Rogers, *Trans. & Proc. Roy. Soc. South Australia* 51: 294 (1927). Type: Western Australia, Pindalup, Nov.1926, *P.J. Barwise s.n.* (holo AD!).

Note: Although the name *Goadbyella gracilis* is based on a peloric monstrosity, nevertheless aspects of the description including possession of a bilobed labellum and flower colour match the species later described as *Microtis alboviridis*. Both species descriptions are based on specimens collected by *Barwise* at the same location and on the same date. Additionally, *Microtis alba*, to which the name *Goadbyella gracilis* has previously been linked, and *Microtis alboviridis* are also unlikely to flower at the same time at this location.

Microtis alboviridis R.J.Bates, *Orchadian* 16(2): 70-74, f.1, t. (2008). Type: Western Australia, South-west division, Pindalup, 3 Nov. 1926, *P.Barwise s.n.* (holo PERTH 00297232; iso PERTH), ***syn. nov.***

Microtis gracilis*, Shannon SF, WA *(MAC)

Microtis graniticola R.J.Bates, *J. Adelaide Bot. Gard.* 17: 120, 122-123, f. 1F-I (1996).

Microtis javanica Rchb.f., *Bonplandia* (Hannover) 5: 36 (1857).

Microtis longifolia Colenso, *Trans. & Proc. New Zealand Inst.* 17: 247 (1885).

Microtis magnadenia R.S.Rogers, *Trans. & Proc. Roy. Soc. South Australia* 54: 44 (1930).

Microtis media R.Br., *Prod.* 321 (1810).

Microtis oblonga R.S. Rogers, *Trans. & Proc. Roy. Soc. South Australia* 47: 339 (1923).

Microtis oligantha L.B.Moore, *New Zealand J. Bot.* 6: 473 (1968).

Microtis papillosa Colenso, *Trans. & Proc. New Zealand Inst.* 18: 269 (1885 publ. 1886).

Microtis parviflora R.Br., *Prod.* 320 (1810).

Microtis pulchella R.Br., *Prod.* 321 (1810).

Microtis quadrata (R.J.Bates) D.L.Jones et M.A.Clem., *Orchadian* 14(8): Sci. Suppl. xiv (June 2004).

Microtis rara R.Br., *Prod.* 321 (1810).

Microtis unifolia (G.Forst.) Rchb.f., *Beitr. Syst. Pfl.* 62 (1871).

Prasophyllum R.Br., Prod. 317 (1810). Type species: *Prasophyllum australe* R.Br., *fide* N.Hallé (1977).

Prasophyllum Sect. *Integra* G.Don in Loudon's, *Hortus Britannicus* 369 (1830). Type: *Prasophyllum elatum* R.Br. (*vide* Jones & Clements 1989).

Prasophyllum Sect. *Eu-prasophyllum* Hook.f., *Fl. Tasm.* 2: 9 (1858); Benth., *Fl. Austral.* 6: 335 (1873); Pfitzer in Engl. & Prantl, *Pflanzenf.* II, 6: 101 (1889), *nom. illeg.*

A genus of 13 species distributed across southern and eastern Australia, mainly in the south-west of Western Australia.

Prasophyllum australe R.Br., *Prod.* 318 (1810).

Prasophyllum brownii Rchb.f., Beitr. *Syst. Pflanzenk.* 16 (1871).

Prasophyllum cuneatum D.L.Jones et G.Brockman, *Australian Orchid Review* 81(6): 50-52, t (2016).

Prasophyllum drummondii Rchb.f., Beitr. *Syst. Pflanzenk.* 69 (1871).

Prasophyllum elatum R.Br., *Prod.* 318 (1810).

Prasophyllum elatum*, Buxton, NSW *(David Banks)

Prasophyllum fimbria Rchb.f., Beitr. *Syst. Pflanzenk.* 60 (1871).

Prasophyllum flavum R.Br., *Prod.* 318 (1810).

Prasophyllum flavum, Mt. Wilson, NSW (John Roberts)

Prasophyllum giganteum Lindl.in *Edwards's, Bot. Reg.* 1-23: Swan Riv. Append. liv (1840).

Prasophyllum gracillimum Nicholls, *Victorian Naturalist* 64: 175, f. G-I (1948).

Prasophyllum macrotys Lindl.in *Edwards's, Bot. Reg.* 1-23: Swan Riv. Append. liv (1840).

Prasophyllum regium R.S.Rogers, *Trans. & Proc. Roy. Soc. South Australia* 42: 27 (1918).

Prasophyllum sargentii (Nicholls) A.S.George, *Nuytsia*, 1(2): 189 (1971).

Prasophyllum triangulare Fitzg., *Gard. Chron.* (new ser.) 17: 495 (1882).

Paraprasophyllum M.A.Clem. et D.L.Jones, ***gen nov.***

With affinities to *Prasophyllum* R.Br. but differing by a generally smaller stature and lacking stolonoid roots and daughter tubers resulting in non-colony forming habit and relatively short (about as long as wide) ovaries and capsules projecting at an angle to the scape. Type species: *Prasophyllum patens* R.Br., here designated.

Perennial terrestrial glabrous *herbs*. *Roots* filamentous, fleshy. *Tubers* globose to subglobose, paired, fleshy, naked; replacement tubers formed on the end of short droppers. *Stem* short, erect, with membranous cataphylls at each node. *Leaf* 1-per shoot, basal, sessile, amphistomatic. *Leaf lamina* much longer than wide, erect, cylindrical, terete, hollow, with a free section above the point of emergence of the inflorescence. *Inflorescence* terminal, racemose or spicate, few to many-flowered, erect, emergent through a membranous point (fistula) on the distal part of the leaf. *Peduncle* wiry to stout, without sterile bracts. *Floral bracts* reduced, closely sheathing. *Ovary* elongate to nearly round (about as long as wide), spreading, glabrous, projecting at an angle to the scape, often turgid at anthesis. *Flowers* non-resupinate, dull coloured (green, brown, blackish, white, pastel colours), often sweetly fragrant, subsessile to sessile. *Dorsal sepal* free, broader than the lateral sepals, deflexed or incurved. *Lateral sepals* free or variously connate, narrower than the dorsal sepal, erect or incurved. *Petals* free, usually dissimilar in size, shape and colouration to the sepals, porrect to spreading. *Labellum* free, rigidly attached by its base or by a short immobile claw to the anterior column base, markedly dissimilar in shape, size and colouration to the sepals and petals, ecalcarate. *Labellum lamina* not lobed, erect to strongly recurved near the middle, sometimes papillate; margins usually undulate to crispate, rarely subentire. *Callus* consisting of a raised fleshy central plate, usually channelled and often ridged, sometimes with accessory plates, smooth, rugose or papillate; base expanded into a broad shallow basin; margins flat or raised, entire, irregular, lobed or papillate; apex entire, emarginate or notched, smooth or papillate. *Nectar* present. *Spur* absent. *Column* lacking free filament and style, short, nearly as long as wide. *Column foot* absent. *Pseudospur* absent. *Column wings* fused basally to the column base, erect and free distally, usually with a small basal posterior lobe. *Anther* dorsal, basifixed, erect and parallel to the axis of the column, rostrate. *Pollinarium* present. *Pollinia* 4, in 2 pairs, yellow, sectile, attached to a terminal viscidium via a ligulate hamulus; pollen grains in tetrads. *Viscidium* dorsal, ovate to ligulate. *Rostellum* apical, ventral. *Stigma* ventral, entire, quadrate. *Capsules* dehiscent, erect, glabrous, usually ribbed; pedicels not elongating in fruit; peduncle not elongating in fruit. *Seeds* numerous, light coloured.

Etymology: From the Greek '*para*, alongside, beside or close by as a prefix to the established genus *Prasophyllum* in reference the parallel or proximal position of the two groups of species.

A genus of *c.* 126 described species in southern and eastern Australia with two species in New Zealand.

Subgen. ***Leptophyllum*** M.A.Clem. et D.L.Jones, ***subgen. nov.***

Plants 15 to 60 cm tall, usually solitary, with a short slender inflorescence with up to 50 small predominantly cream coloured flowers and a slender leaf; sepals, petals and labellum porrect with recurved apex; and labellum as long as the sepals and petals. Type species: *Prasophyllum ovale* Lindl., here designated.

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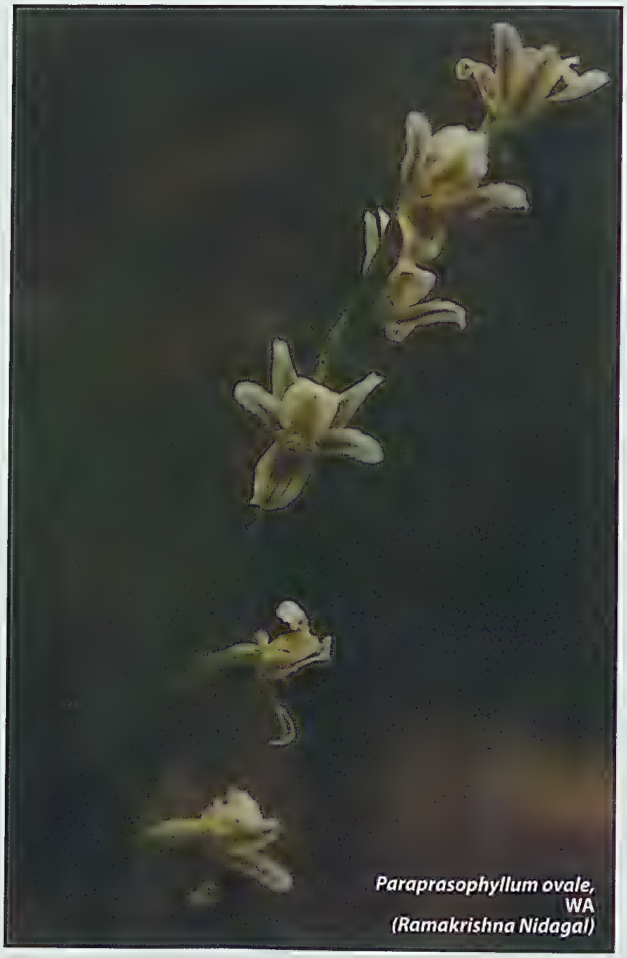
Etymology: From the Greek *lepto*, slender and *phyllo* a leaf, in reference to the common name for the group of Slender Leek orchids (Brown *et al.* 2013).

Paraprasophyllum cyphochilum (Benth.) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum cyphochilum* Benth., *Fl. Austral.* 5: 340 (1873).

Paraprasophyllum ovale (Lindl.) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum ovale* Lindl. in *Edwards's, Bot. Reg.* 1-23: Swan Riv. Append. liv (1840).


***Paraprasophyllum ovale*, WA (Ramakrishna Nidagal)**

Paraprasophyllum plumiforme (Fitzg.) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum plumiforme* Fitzg., *Gard. Chron.* (new ser.) 17: 495 (1882).

Subgen. ***Ceratosepalum*** M.A.Clem. et D.L.Jones, ***subgen. nov.***

Plants 10 to 45 cm tall, solitary or often in clumps, with a slender to attenuate inflorescence of up to 50 white, dull green, brown, maroon, red and yellow coloured flowers; sepals connate, erect and apiculate, the labellum equal to or shorter than petals and sepals. Type species: *Prasophyllum macrostachyum* R.Br., here designated.

Etymology: From the Greek *ceras* (horn), *sepalum* (sepals), referring to the horn-like tips on the lateral sepals.

Paraprasophyllum calcicola (R.J.Bates) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum calcicola* R.J.Bates, *J. Adel. Bot. Gard.* 11: 179, fig. 1 (20 Jul.1989).

Paraprasophyllum gracile (Lindl.) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum gracile* Lindl. in *Edwards's, Bot. Reg.* 1-23: Swan Riv. Append. liv (1840).

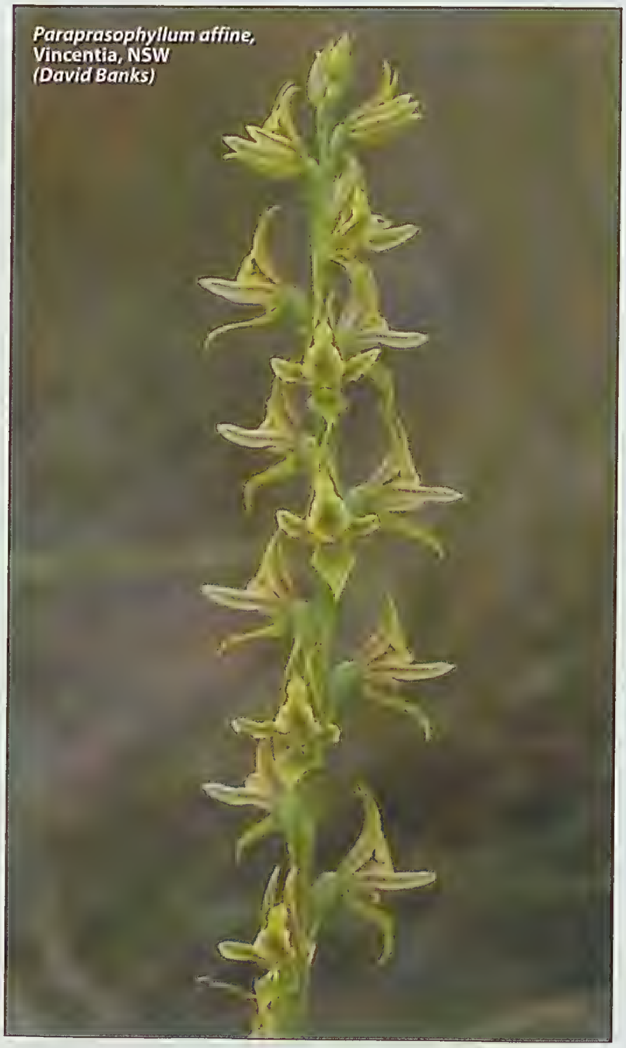
Paraprasophyllum hians (Rchb.f.) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum hians* Rchb.f., *Beitr. Syst. Pflanzenk.* 59, in obs. 61 (1871).

Paraprasophyllum macrostachyum (R.Br.) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum macrostachyum* R.Br., *Prod.* 318 (1810).

Paraprasophyllum paulinae (D.L.Jones et M.A.Clem.) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum paulinae* D.L.Jones et M.A.Clem., *Nuytsia* 10(3): 414-16, f. 3 (1996).

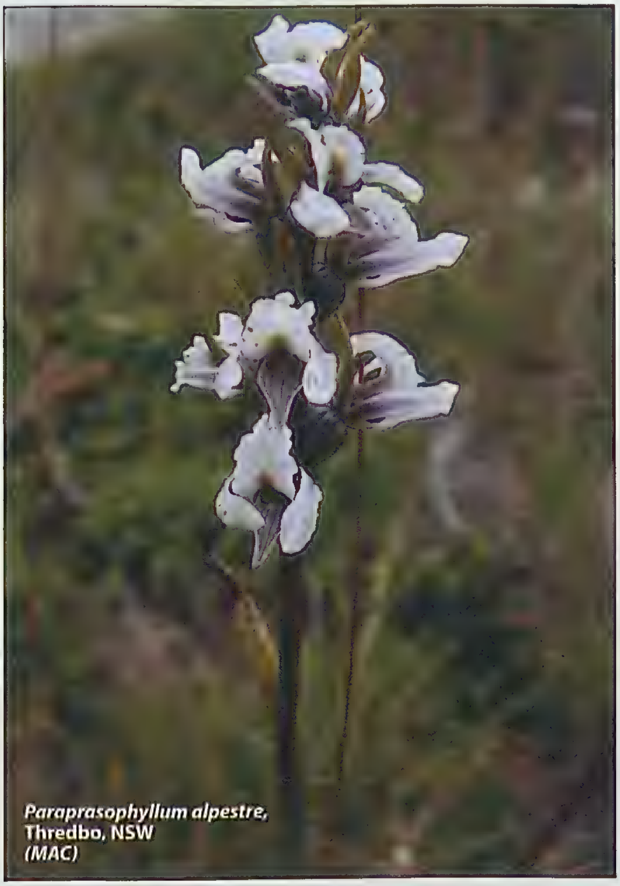
Subgen: ***Paraprasophyllum***

Paraprasophyllum affine (Lindl.) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum affine* Lindl., *Gen. sp. orchid.* pl. 516 (1830).


***Paraprasophyllum affine*, Vincentia, NSW (David Banks)**

Paraprasophyllum albovirens (D.L.Jones et L.M.Copel) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum albovirens* D.L.Jones et L.M.Copel., *Australian Orchid Review* 83(5): 46-47, Fig. 1 (2018).

Paraprasophyllum alpestre (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum alpestre, Austral. Orchid. Res.* 3: 98-99, f. 6.1 (1998). Type: New South Wales; Charlottes Pass, Kosciusko National Park, 1880 m, 7 Mar.1997, *D.L Jones 15106 and M. Garratt* (Lectotype spec. (a) CANB!, here chosen). Note: Unfortunately the type is a mixed collection of two species that grow sympatrically throughout the higher montane regions of Mt Kosciusko National Park. The lectotype has been chosen to fix the name as originally intended and illustrated.



Paraprasophyllum alpestre,
Thredbo, NSW
(MAC)

Paraprasophyllum alpinum (R.Br.) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum alpinum* R.Br., *Prod.* 318 (1810).

Paraprasophyllum amoenum (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum amoenum* D.L.Jones, *Austral. Orch. Res.* 3: 99-100, f.6.2 (1998).

Paraprasophyllum anticum (D.L.Jones et D.T.Rouse) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum anticum* D.L.Jones et D.T.Rouse, *Austral. Orchid. Res.* 5: 143-144, f.5.1, t. (21 Dec. 2006).

Paraprasophyllum apoxychilum (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum apoxychilum* D.L.Jones, *Austral. Orch. Res.* 3: 100-101, f.6.3 (1998).

Paraprasophyllum appendiculatum (Nicholls) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum appendiculatum* Nicholls, *Victorian Naturalist* 66: 212, f. F-J (1950).

Paraprasophyllum argillaceum (D.L.Jones et D.T.Rouse) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum argillaceum* D.L.Jones et D.T.Rouse., *Australian Orchid Review* 83(5): 50-3, f., t. (2018).

Paraprasophyllum asinantum (R.J.Bates) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum asinantum* R.J.Bates, *Australian Orchid Review* 80(4): 56-58 (2015).

Paraprasophyllum atratum (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum atratum* D.L.Jones, *Austral. Orchid. Res.* 5: 144-145, f.5.2, t. (21 Dec. 2006).

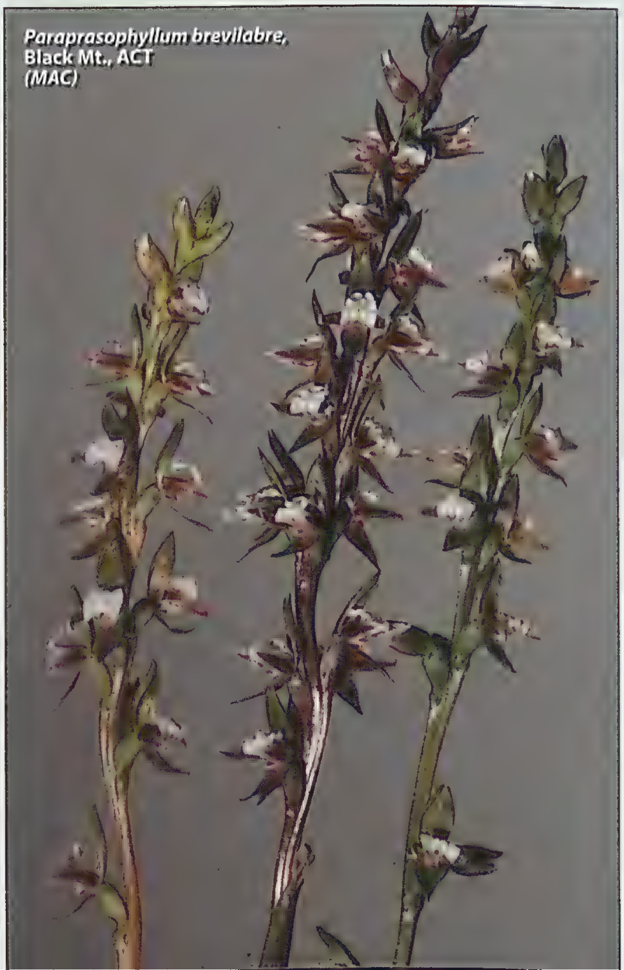
Paraprasophyllum bagoense (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum bagoensis* D.L.Jones, *Orchadian* 13(4): 150-151, f. 1 (2000).

Paraprasophyllum barnettii (D.L.Jones et D.T.Rouse) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum barnettii* D.L.Jones et D.T.Rouse, *Austral. Orchid. Res.* 5: 145-146, f.5.3, t. (21 Dec. 2006).

Paraprasophyllum basalticum (D.L.Jones et L.M.Copel.) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum basalticum* D.L.Jones et L.M.Copel., *Australian Orchid Review* 83(1): 39-41, t. (2018).

Paraprasophyllum beatrix (D.L.Jones et D.T.Rouse) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum beatrix* D.L.Jones et D.T.Rouse, *Austral. Orchid. Res.* 5: 146, f.5.4, t. (21 Dec. 2006).

Paraprasophyllum brevilabre (Lindl.) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum brevilabre* (Lindl.) Hook.f., *Fl. Tasman.* 2: 11, t. 110, f. A. (1858).



Paraprasophyllum brevilabre,
Black Mt., ACT
(MAC)

Paraprasophyllum brevisepalum (D.L.Jones et L.M.Copel.) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum brevisepalum* D.L.Jones et L.M.Copel., *Australian Orchid Review* 83(1): 42-43, t. (2018).

Paraprasophyllum campestre (R.J.Bates et D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum campestre* R.J.Bates et D.L.Jones, *Austral. Orch. Res.* 2: 75-76, f. 101 (1991).

Paraprasophyllum canaliculatum (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum canaliculatum* D.L.Jones, *Orchadian* 12(3): 125-127, t., f. (1997).

Paraprasophyllum candidum (R.J.Bates et D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum candidum* R.J.Bates et D.L.Jones, *Austral. Orch. Res.* 2: 76-77, f. 102 (1991).

Paraprasophyllum caricetum (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum caricetum* D.L.Jones, *Orchadian* 13(4): 151-155, f. 2 (2000).

Paraprasophyllum castaneum (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum castaneum* D.L.Jones, *Austral. Orch. Res.* 3: 102-103, f.6.4 (1998).

Paraprasophyllum catenemum (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum catenemum* D.L.Jones, *Austral. Orchid. Res.* 5: 146-147, f. 5.5 (21 Dec. 2006).

Paraprasophyllum caudiculum (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum caudiculum* D.L.Jones, *Orchadian* 13(4): 155-156, f. 3 (2000).

Paraprasophyllum chasmogamum (R.J.Bates et D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum chasmogamum* R.J.Bates et D.L.Jones, *Aust. Orchid Res.* 2: 77, f. 103 (1991).

Paraprasophyllum colemaniae (R.S.Rogers) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum colemaniae* R.S.Rogers, *Trans. & Proc. Roy. Soc. South Australia* 47: 337 (1923).

Paraprasophyllum colensoi (Hook.f.) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum colensoi* Hook.f., *Fl. nov.-zel.* 1: 241 (1853).

Paraprasophyllum collinum (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum collinum* D.L.Jones, *Austral. Orchid. Res.* 5: 147-148, f. 5.6 (21 Dec. 2006).

Paraprasophyllum concinnum (Nicholls) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum concinnum* Nicholls, *Victorian Naturalist* 64: 232, f. A-E (1948).

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Paraprasophyllum constrictum (R.S.Rogers) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum constrictum* R.S.Rogers, *Trans. & Proc. Roy. Soc. South Australia* 33: 213-4, t. 13 B, f. 1-5 (1909).

Paraprasophyllum copelandii (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum copelandii* D.L.Jones, *Australian Orchid Review* 83(2): 49-52, f., t. (2018).

Paraprasophyllum copelandii*, Carrai, NSW *(Lachlan Copeland)

Paraprasophyllum correctum (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum correctum* D.L.Jones, *Novon* 4(2): 106-108 (1994).

Paraprasophyllum crassum (D.L.Jones et R.J.Bates) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum crassum* D.L.Jones et R.J.Bates, *Australian Orchid Review* 82 (3): 40-42, t. (2017).

Paraprasophyllum crebriflorum (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum crebriflorum* D.L.Jones, *Muelleria* 18: 103-1045, f. 3 (2004).

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Paraprasophyllum fuscum (R.Br.) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum fuscum* R.Br., *Prod.* 318 (1810).

Paraprasophyllum gilgai (D.L.Jones et D.T.Rouse) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum gilgai* D.L.Jones et D.T.Rouse, *Austral. Orchid. Res.* 5: 149-150, t. (21 Dec. 2006).

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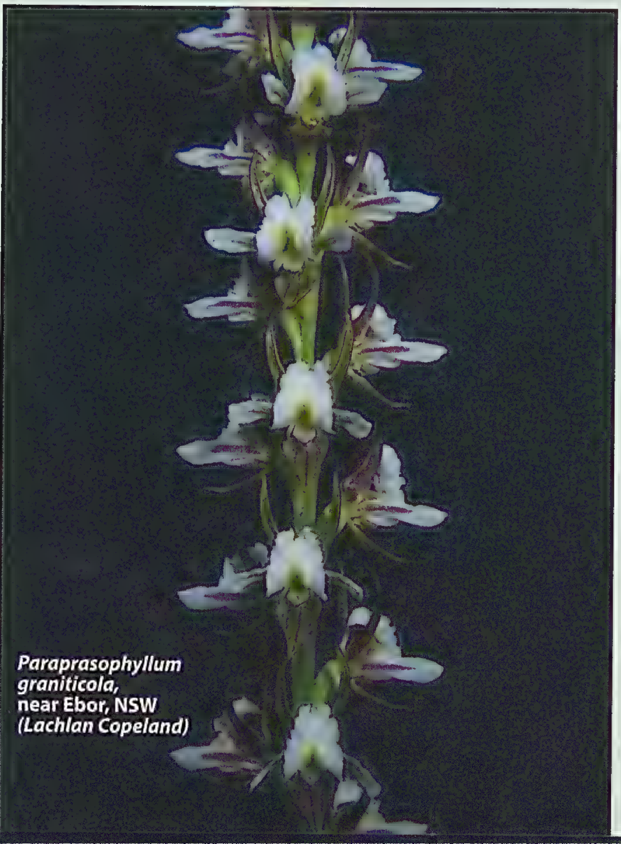

Paraprasophyllum graniticola*, near Ebor, NSW *(Lachlan Copeland)

Paraprasophyllum gravesii (R.J.Bates) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum gravesii* R.J.Bates, *Australian Orchid Review* 84(3): 18-19, t. (2019).

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Paraprasophyllum holzingeri (D.L.Jones et L.M.Copel.) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum holzingeri* D.L.Jones et L.M.Copel., *Australian Orchid Review* 83(1): 46-47, t. (2018).

Paraprasophyllum hygrophilum (D.L.Jones et D.Rouse) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum hygrophilum* D.L.Jones et D.Rouse, *Orchadian* 14(6): 282-284, f. 1 (2003).

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Paraprasophyllum incorrectum (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum incorrectum* D.L.Jones, *Muelleria* 18: 103-1045, f. 3 (2004).

Paraprasophyllum incurvum (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum incurvum* D.L.Jones, *Austral. Orch. Res.* 3: 106-107, f.6.6 (1998).

Paraprasophyllum innubum (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum innubum* D.L.Jones, *Orchadian* 15(8): 372-373, f.1,a-d (2007).

Paraprasophyllum jeaneganiae (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum jeaneganiae* D.L.Jones, *Australian Orchid Review* 84(2): 35-37, f., t. (2019).

Paraprasophyllum keltonii (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum keltonii* D.L.Jones, *Orchadian* 15(8): 372-373, f.1,e-h (2007).

Paraprasophyllum laxum (R.J.Bates) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum laxum* R.J.Bates, *J. Adelaide Bot. Gard.* 22: 7-8, f. 1 (2008).

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Paraprasophyllum mimulum (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum mimulum* D.L.Jones, *Orchadian* 14(8): 372-373, f.1, t. (2004).

Paraprasophyllum montanum (R.J. Bates et D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum montanum* R.J. Bates et D.L.Jones, *Austral. Orch. Res.* 2: 79-80, f. 107 (1991).

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Paraprasophyllum niphopedium (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum niphopedium* D.L.Jones, *Orchadian* 13(4): 161-162, f. 6 (2000).

Paraprasophyllum nitidum (D.L.Jones et R.J.Bates) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum nitidum* D.L.Jones et R.J.Bates, *Australian Orchid Review* 82(3): 38-39, t. (2017).

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Paraprasophyllum occultans (R.J.Bates) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum occultans* R.J.Bates, *J. Adelaide Bot. Gard.* 11: 192, f. 2. (20 July 1989).

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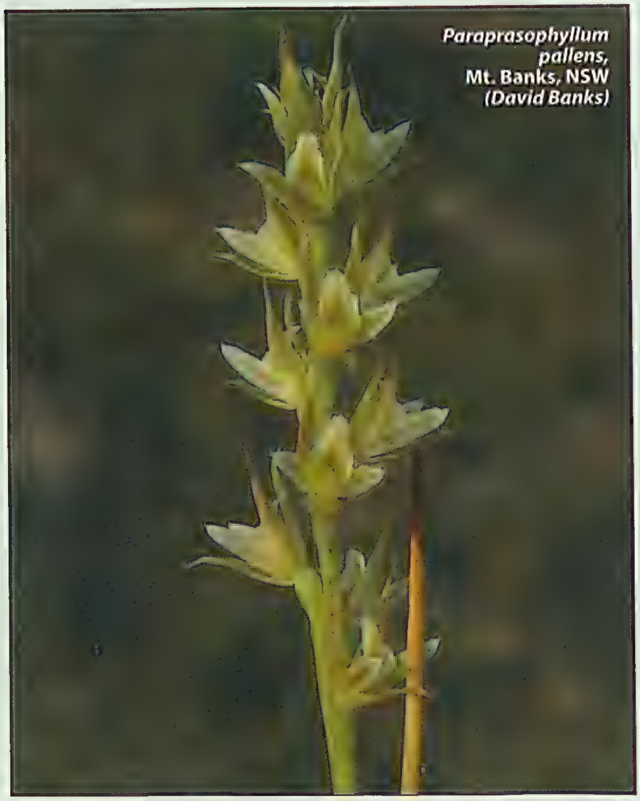
Paraprasophyllum olidum (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum olidum* D.L.Jones, *Austral. Orch. Res.* 3: 108-109, f. 6.8 (1998).

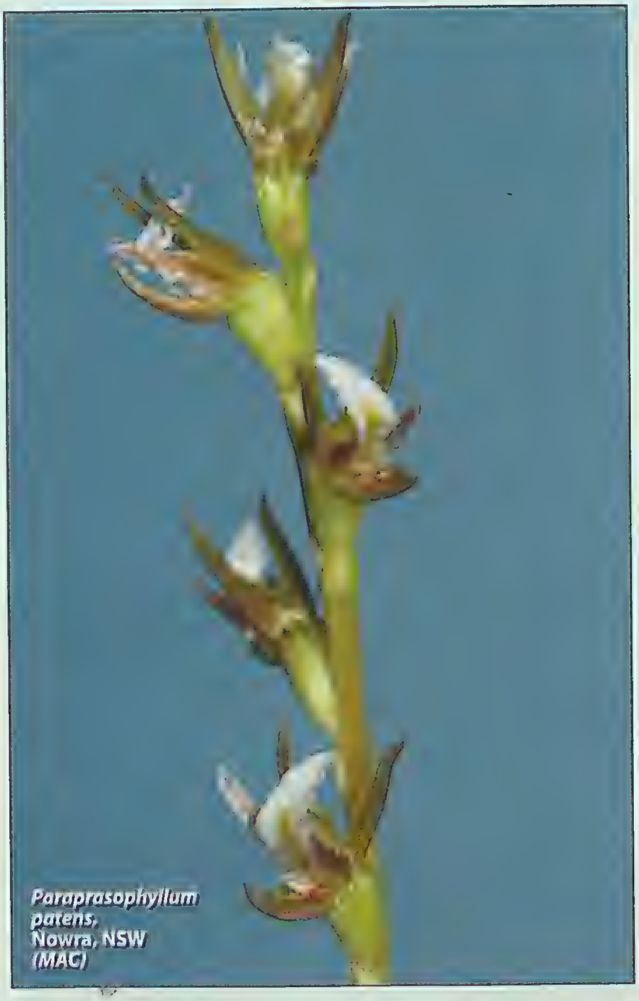
Paraprasophyllum pallens (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum pallens* D.L.Jones, *Orchadian* 13(4): 162-167, f. 7 (2000).


Paraprasophyllum pallens,* Mt. Banks, NSW *(David Banks)

Paraprasophyllum pallidum (Nicholls) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum pallidum* Nicholls, *Proc. Roy. Soc. Victoria* (new ser.) 46: 33, f. P-U (1933).

Paraprasophyllum parviflorum (Nicholls) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum parviflorum* Nicholls, *Victorian Naturalist* 57: 191,_ f. A-I (1941).

Paraprasophyllum patens (R.Br.) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum patens* R.Br., *Prod.* 318 (1810).


Paraprasophyllum patens,* Nowra, NSW *(MAC)

Paraprasophyllum perangustum (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum perangustum* D.L.Jones, *Austral. Orch. Res.* 3: 109-110, f. 6.9 (1998).

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Paraprasophyllum petilum*, Tarengo, NSW *(MAC)

Paraprasophyllum pictum (D.L.Jones et L.M.Copel.) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum pictum* D.L.Jones et L.M.Copel., *Australian Orchid Review* 83(1): 48-49, t. (2018).

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Paraprasophyllum praecox (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum praecox* D.L.Jones, *Austral. Orchid. Res.* 5: 153, f.5.10, t. (21 Dec. 2006).

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Paraprasophyllum retroflexum (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum retroflexum* D.L.Jones, *Orchadian* 13(4): 167-169, f. 8 (2000).

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Paraprasophyllum roseum (D.L.Jones et R.J.Bates) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum roseum* D.L.Jones et R.J.Bates, *Australian Orchid Review* 82 (3): 32-34, t., f. 2 (2017).

Paraprasophyllum rostratum (Lindl.) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum rostratum* Lindl., *Gen. sp. orchid.* pl. 516 (1840).

Paraprasophyllum rotundiflorum (R.S.Rogers) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum rotundiflorum* R.S.Rogers, *Trans. & Proc. Roy. Soc. South Australia* 33: 210 (1909).

Paraprasophyllum rousei (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum rousei* D.L.Jones, *Australian Orchid Review* 82(2): 54-56, f., t. (2017).

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Paraprasophyllum secutum (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum secutum* D.L.Jones, *Austral. Orch. Res.* 3: 113-114, f. 6.11 (1998).

Paraprasophyllum solstitium (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum solstitium* D.L.Jones, *Orchadian* 13(4): 169-170, f. 9 (2000).

Paraprasophyllum spadiceum (D.L.Jones et R.J.Bates) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum spadiceum* D.L.Jones et R.J.Bates, *Australian Orchid Review* 82 (3): 35-37, t. (2017).

Paraprasophyllum sphacelatum (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum sphacelatum* D.L.Jones, *Muelleria.* 9: 59-61, f. 4 (1996).

Paraprasophyllum spicatum (R.J.Bates et D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum spicatum* R.J.Bates et D.L.Jones, *Austral. Orch. Res.* 2: 80-81, f. 109 (1991).

Paraprasophyllum stellatum (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum stellatum* D.L.Jones, *Austral. Orch. Res.* 3: 115-116, f. 6.13 (1998).

Paraprasophyllum stygium (D.L.Jones et D.T.Rouse) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum stygium* D.L.Jones et D.T.Rouse, *Australian Orchid Review* 82 (3): 46-48, t., f. 1 (2017).

Paraprasophyllum suaveolens (D.L.Jones et R.J.Bates) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum suaveolens* D.L.Jones et R.J.Bates, *Muelleria* 8(2): 184-185, f. 2 g-j (1994).

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Paraprasophyllum sylvestre (R.J.Bates et D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum sylvestre* R.J.Bates et D.L.Jones, *Austral. Orch. Res.* 2: 81-82, f. 110 (1991).

Paraprasophyllum sylvicola (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum sylvicola* D.L.Jones, *Australian Orchid Review* 82(2): 56-58, f., t. (2017).

Paraprasophyllum tadgellianum (R.S.Rogers) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum tadgellianum* R.S.Rogers, *Trans. & Proc. Soc. South Australia* 47: 338-9 (1923).

Paraprasophyllum taphanyx (D.L.Jones) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum taphanyx* D.L.Jones, *Orchadian* 14(8): 373-374, f.2, t. (2004).

Paraprasophyllum tortilis (D.L.Jones et R.J.Bates) M.A.Clem. et D.L.Jones, ***comb. nov.*** Basionym: *Prasophyllum tortilis* D.L.Jones et R.J.Bates, *Australian Orchid Review* 82 (3): 43-45, t. (2017).

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Four New Species of *Corysanthes* (Orchidaceae: Acianthiinae) from southern Australia

by David L. Jones

Abstract

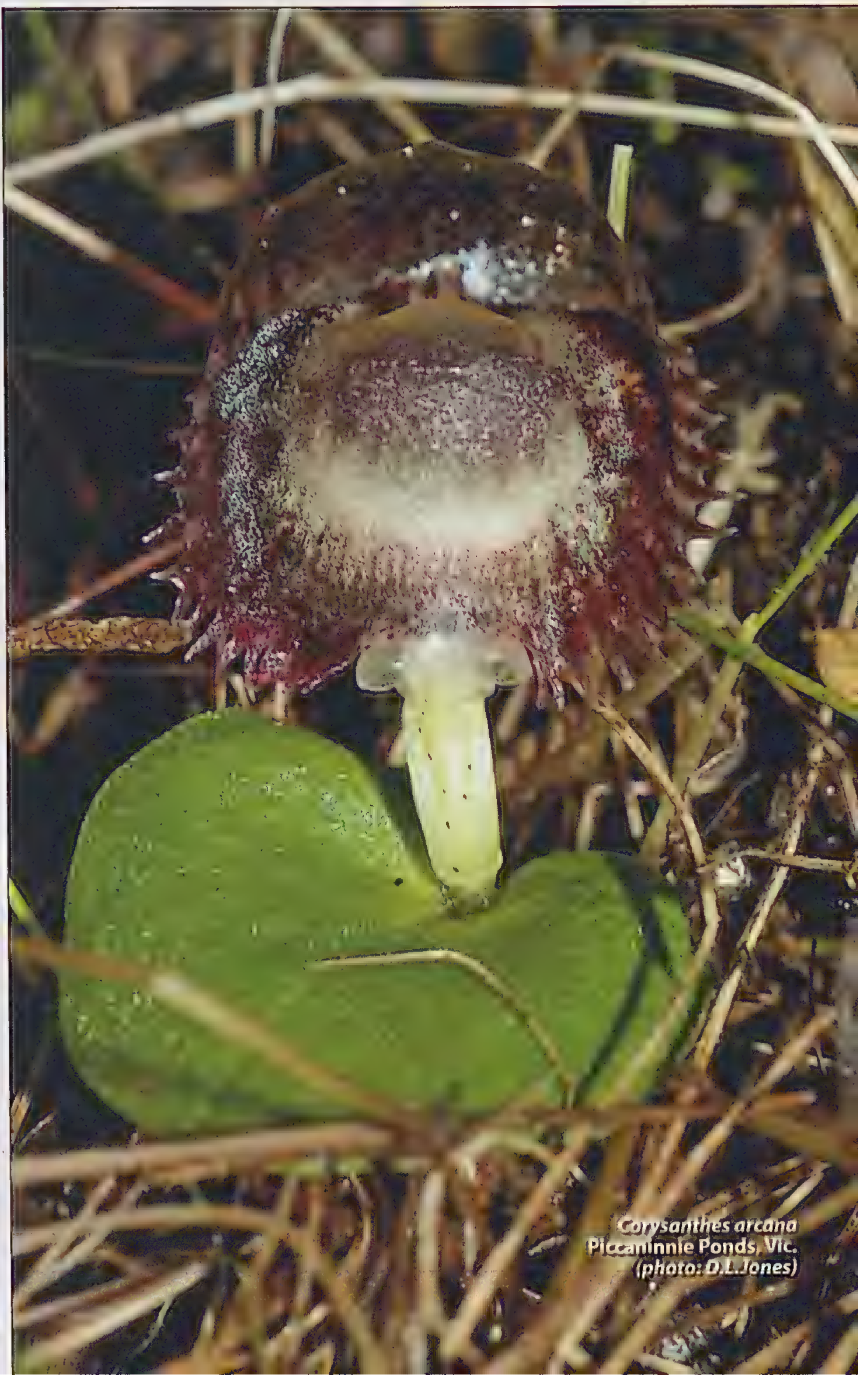
Corysanthes arcana and *Corysanthes tecta*, both with affinities to *Corysanthes diemenica*; *Corysanthes heberlei* with affinities to *Corysanthes limpida*, and *Corysanthes intuta* with affinities to *Corysanthes despectans*, are described here as new, compared with similar taxa and notes are provided on distribution, habitat, etymology and conservation status.

Key Words

Orchidaceae, *Corysanthes arcana*, *Corysanthes tecta*, *Corysanthes diemenica*, *Corysanthes heberlei*, *Corysanthes limpida*, *Corysanthes intuta*, *Corybas diemenicus*, *Corybas limpidus*, *Corybas dilatatus*, new species, Victoria, South Australia, Western Australia, Australian flora.

Introduction

Continuing studies into *Corysanthes* in southern Australia, particularly the complex of taxa surrounding *Corysanthes diemenica* Lindl. (see for example Jones 1991, 2008, Jones & Copeland 2018) and *Corysanthes despectans* (D.L.Jones & R.C.Nash) D.L.Jones & M.A.Clem. have identified four undescribed species. The distinctiveness of two species related to *Corysanthes diemenicus* has been previously recognised in Jeanes & Backhouse (2006) as *Corybas* sp. aff. *diemenicus* 1 & 2 and more recently both treated as *Corybas* species 'late flowering' (Backhouse 2019). Both of these species are cryptic, growing in dense highly specialised wet habitats which are likely to be adversely impacted by a drying climate. Two other species from Western Australia are also described, one with affinities to *Corysanthes limpidus* and the other to *Corysanthes despectans*. Both were shown to me by the renowned orchidologist Ron Heberle in 1986. All four are described here as new species together with notes on distribution, ecology, distinguishing features, etymology and conservation status.



Corysanthes arcana
Piccaninnie Ponds, Vic.
(photo: D.L.Jones)

TAXONOMY

1. *Corysanthes arcana* D.L Jones, ***sp. nov.*** With affinity to *Corysanthes diemenica* Lindl., but differing by its swampy habitat, shorter labellum tube, less conspicuous darker-coloured labellum boss with a mounded apex, narrower dorsal sepal, narrower labellum and fewer marginal teeth on the labellum lamina, those towards the apex much longer than any marginal teeth on *Corysanthes diemenica*; also with *Corysanthes tecta* D.L.Jones (this paper), but differing by its longer labellum tube, larger labellum boss, longer narrowly pointed marginal teeth on the labellum and larger labellum auricles.

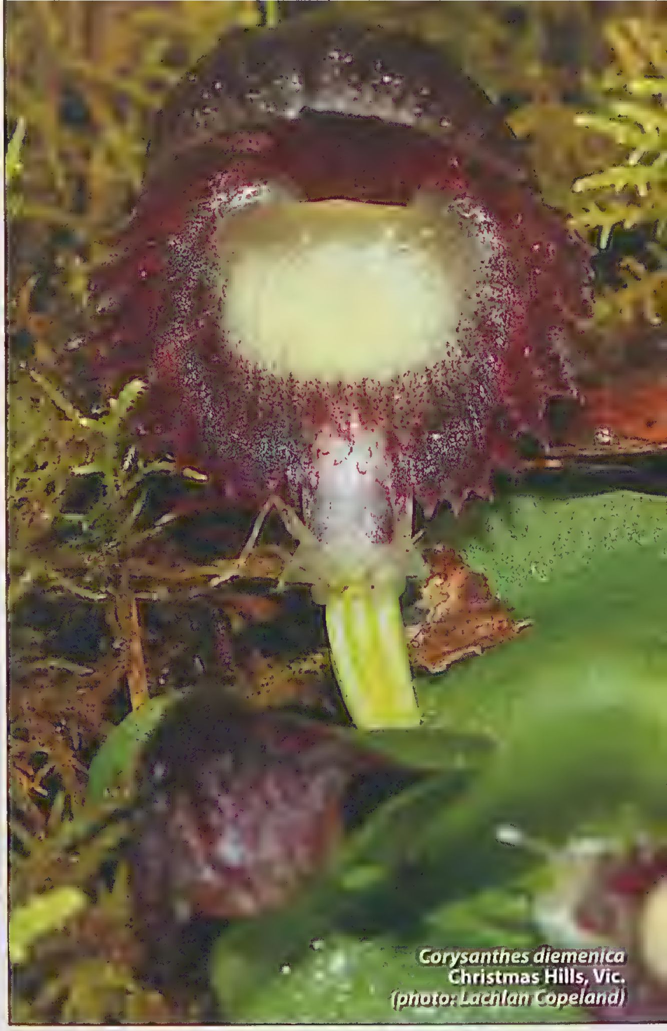
Type: Victoria; Piccaninnie Ponds, 16 Sept. 2004, *D.L.Jones 19105, K.J.Richards, A.Pritchard & D.Ryan* (holo CANB 661360, iso MEL).

Description: Terrestrial tuberous *herb* forming small clonal colonies. *Leaf* broadly cordate to orbicular, 10-15 mm long, 10-15 mm wide at anthesis, expanding considerably after flowering, thin-textured, green on both surfaces, paler and pellucid beneath, apiculate. *Peduncle* 1.5-2 mm long. *Ovary* erect or slightly recurved, 3-4 mm long, 1-1.5 mm wide. *Fertile bract* ovate, c. 2 mm long, c. 1.6 mm wide, closely sheathing. *Flower* erect or slightly recurved, dominated by the dorsal sepal and labellum, 8-11 mm long, 7-9 mm wide, dorsal sepal and labellum brownish purple with translucent areas, labellum boss reddish with cream margins. *Dorsal sepal* erect in the proximal half then curved forwards at c. 90°, obovate-spathulate when flattened, 13-16 mm long, 6-8 mm wide, concave, protruding over the labellum lamina, apex broadly obtuse; narrow proximal part translucent reddish grey; distal expanded part heavily blotched with reddish purple. *Lateral sepals* projected forwards and porrect in front of the base of the labellum tube, filiform, c. 4-5 mm long, c. 0.3 mm wide, whitish; base connate; apex entire or unequally lobed. *Petals* hidden by the labellum, linear, c. 1.5 mm long, c. 0.5 mm wide, falcate, whitish, auriculate at the base where they join the column, then tapering to a filiform point, sometimes unequally lobed. *Labellum* conspicuous, longer than dorsal sepal. *Labellum basal tube* 6-7 mm long, the base and auricles visible below labellum lamina, erect throughout then abruptly decurved through 180° and greatly expanded into the lamina. *Callus* inside the labellum tube consisting of a series of transverse ridges. *Labellum lamina* broadly elliptical in frontal view, 7-9 mm long, 7-10 mm wide, brownish purple with paler translucent areas, the lower part with very short red erect papillae; margins shallowly incurved or flared, with 10-13 pairs of blunt, irregular narrowly triangular teeth to 2 mm long. *Labellum boss* broadly rounded, prominent, reddish with paler margins, smooth, thickened in longitudinal section. *Auricles* c. 2 mm across, widely opening, directed downwards, prominent. *Column* recurved, c. 2 mm long, broadest at the base, minutely winged. *Stigma* c. 0.8 mm in diameter, elliptical, concave. *Anther* c. 1 mm long, obtuse. *Pollinarium* c. 0.8 mm long, c. 0.8 mm wide; pollinia 4, narrow-oblong, yellow, mealy; viscidium oval, c. 0.2 mm long. *Capsule* not seen.

Distribution and Habitat: Occurs in south-western Victoria and south-eastern South Australia. This highly specialised and cryptic species grows in a similar habitat to that of *Corysanthes tecta*, notably dense *Leptospermum lanigerum* swamps often over limestone, with a relatively thick understorey of *Gahnia*. The plants grow on small hummocks of black peaty loam amid clumps and strands of *Schoenus nitens* in wet black alkaline mud.

Flowering Period: September and early October.

Recognition: Cryptic helmet orchid which grows in a specialised dense swampy habitat with relatively small flowers which have a very short labellum tube, dark-coloured labellum boss with mounded apex, relatively narrow dorsal sepal and relatively narrow labellum with long narrowly pointed marginal teeth.



Corysanthes diemenica
Christmas Hills, Vic.
(photo: Lachlan Copeland)

Similar species: This species is probably closest to *Corysanthes tecta*, also described as new in this paper, but generally has smaller paler flowers, longer labellum tube with larger auricles and more numerous marginal labellum teeth which are longer and narrower than those of *Corysanthes tecta*. *Corysanthes arcana* can be distinguished from *Corysanthes diemenica* by its smaller paler brownish-purple flowers with a narrower dorsal sepal, reddish labellum boss with a mounded apex and longer narrower labellum marginal teeth.

Notes: This species produces a very low proportion of flowering plants. Both *Corysanthes arcana* and *Corysanthes tecta* are of generally similar morphology and grow amid dense ground cover in highly specialised isolated habitats that are wet for all or much of the year. They have probably speciated as a result of isolation and local ecological influences.

Conservation Status: Known from relatively few isolated disjunct sites and conserved at the type locality but as with *Corysanthes tecta* growing in a specialised habitat and considered to be endangered; suggest a conservation status of 3EC by the criteria of Briggs & Leigh (1996).

Etymology: From the Latin *arcanus*, shut up, secret, private, mysterious; in reference to the dense habitat and hidden nature of the plants.

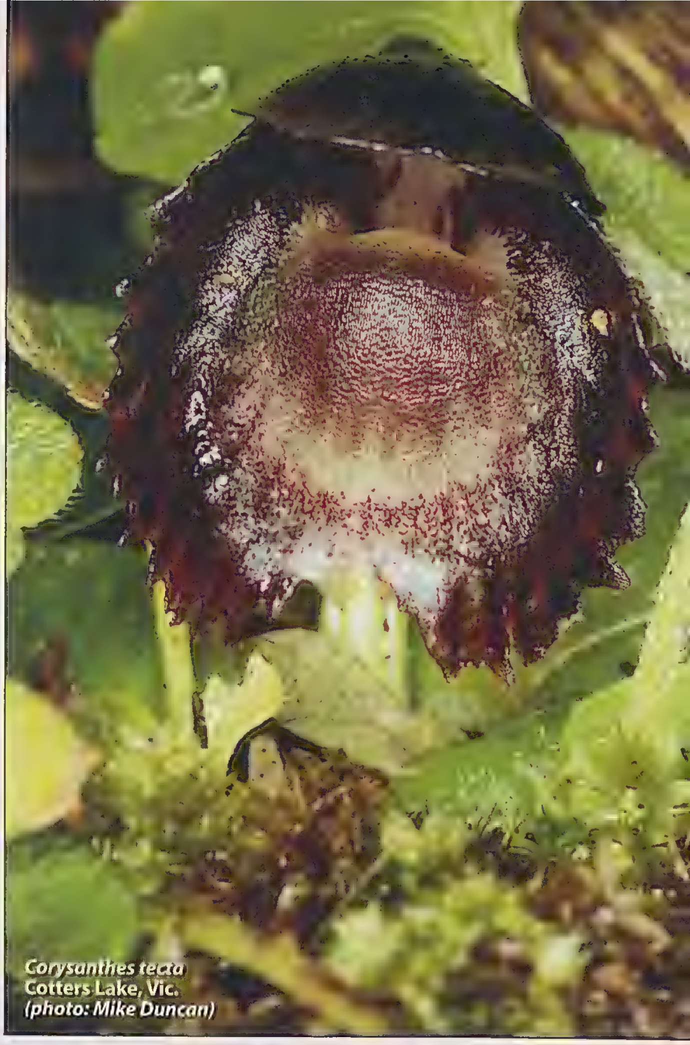
2. *Corysanthes tecta* D.L Jones, ***sp. nov.*** With affinity to *Corysanthes diemenica* Lindl., but differing by its swampy habitat, shorter labellum tube, darker-coloured labellum boss with a mounded apex, narrower dorsal sepal, narrower labellum and with fewer broadly triangular marginal teeth on the labellum; also with *Corysanthes arcana* D.L.Jones (this paper), but differing by its shorter labellum tube, smaller labellum boss, shorter broadly triangular marginal teeth on the labellum and smaller labellum auricles.

Type: Victoria; Cotters Lake, Wilsons Promontory, 30 Sept. 2004, *A.Pritchard & M.Duncan* (ORG 4538) (holo CANB 653885).

Illustration: Plates A & B, page 151, Jeanes & Backhouse (2000) - as *Corybas* sp. aff. *diemenicus* 1; plates page 146 Backhouse (2019).

Description: Terrestrial tuberous *herb* forming small clonal colonies. *Leaf* broadly cordate to orbicular, 15-20 mm long, 15-20 mm wide at anthesis, expanding considerably after flowering, thin-textured, green on both surfaces, paler and pellucid beneath, apiculate. *Peduncle* 1.5-2 mm long. *Ovary* erect or slightly recurved, 3-4 mm long, 1-1.5 mm wide. *Fertile bract* ovate, c. 2 mm long, c. 1.7 mm wide, closely sheathing. *Flower* erect or slightly recurved, dominated by the dorsal sepal and labellum, 10-14 mm long, 9-12 mm wide, dorsal sepal and labellum dark reddish purple with paler bands, labellum boss reddish or purplish with paler margins. *Dorsal sepal* erect in the proximal half then curved forwards at about 90°, obovate-spathulate when flattened, 18-23 mm long, 7-10 mm wide, concave, protruding over the labellum lamina, apex broadly obtuse; narrow proximal part translucent grey with some reddish markings; distal expanded part heavily blotched with reddish purple. *Lateral sepals* projected forwards and porrect in front of the base of the labellum tube, filiform, c. 4 mm long, c. 0.3 mm wide, whitish; base connate; apex entire or unequally lobed. *Petals* hidden by the labellum, linear, c. 1.5 mm long, c. 0.4 mm wide, falcate, whitish, auriculate at the base where they join the column, then tapering to a filiform point, sometimes unequally lobed. *Labellum* conspicuous, longer than the dorsal sepal. *Labellum basal tube* 4-5 mm long, the base and auricles hidden in frontal view by the labellum lamina, erect throughout then abruptly decurved through 180° and greatly expanded into the lamina. *Callus* inside labellum tube consisting of a series of ridged, inward-sloping, imbricate, transverse plates. *Labellum lamina* broadly elliptical in frontal view, 9-12 mm long, 9-12 mm wide, dark reddish purple with paler bands, much of the lower ventral surface covered with short, red, erect or appressed papillae, these especially prominent around the lower part of the boss; margins flared or shallowly incurved, with 6-8 pairs of blunt, irregular, broadly triangular teeth less than 1 mm long. *Labellum boss* central, rounded, moderately prominent, reddish or purplish with paler creamy margins, smooth, thickened in longitudinal section. *Auricles* c. 1.5 mm across, widely opening, directed downwards, the opening partly hidden by the base of the petals. *Column* recurved, c. 2 mm long, broadest at the base, minutely winged. *Stigma* c. 0.8 mm in diameter, elliptical, concave. *Anther* c. 1 mm long, obtuse. *Pollinarium* c. 0.8 mm long, c. 0.8 mm wide; pollinia 4, narrow-oblong, yellow, mealy; viscidium oval, c. 0.2 mm long. *Capsule* not seen.

Distribution and Habitat: Victoria where known from about four sites, two in South Gippsland, one on the Mornington Peninsula (possibly extinct) and two sites in the Otways (Mike Duncan pers. comm.). This highly specialised species, which occurs in small isolated fragmented populations, grows in the habitat known as Swamp Scrub which consists of dense tall thickets of woolly teatree (*Leptospermum lanigerum*) and scented paperbark (*Melaleuca squarrosa*) developed in swampy areas, springs and around small, sluggish streams in seasonally wet or permanently wet black alkaline mud. These patches of scrub are scattered and often retained in paddocks after clearing.


Corysanthes tecta
Cotters Lake, Vic.
(photo: Mike Duncan)

Flowering Period: September and October.

Recognition: Cryptic helmet orchid which grows in a specialised dense swampy habitat with relatively small flowers which have a short labellum tube, dark-coloured labellum boss with mounded apex, relatively narrow dorsal sepal and relatively narrow labellum with broadly triangular marginal teeth.

Similar species: *Corysanthes diemenica*, which grows in a range of well-drained habitats, has larger dark purple flowers than *Corysanthes tecta* with a longer labellum tube, prominent white labellum boss with a broad flat apex, broader dorsal sepal and a wider labellum with more numerous narrowly triangular sharply pointed marginal teeth. *Corysanthes tecta* also has affinities with *Corysanthes arcana* (described this paper) which is native to western Victoria and south-eastern South Australia and differs from *Corysanthes tecta* by its smaller brownish flowers, longer labellum tube with larger auricles, larger labellum boss and longer narrowly triangular marginal teeth on the labellum. Both *Corysanthes tecta* and *Corysanthes arcana* also usually flower later than *Corysanthes diemenica* in Victoria although montane populations of *Corysanthes diemenica* in Tasmania can still be flowering in December.

Notes: This species seems to flower poorly (Backhouse 2019) and is rarely pollinated. A study over two years of 140 flowers resulted in only a single fruiting capsule being observed (Mike Duncan pers. comm.).

Conservation Status: This elusive cryptic species is known from very few isolated populations which only occur in a specialised habitat which in many instances has been impacted by clearing and grazing pressures. Although conserved in Wilsons Promontory National Park, the main population there (*c.* 250 plants) has been badly impacted by a severe storm in 2011 or 2012 that damaged the canopy resulting in increased light at ground level, greater fluctuations of humidity, increased soil drying and changes in species composition (Mike Duncan pers. comm.). Relict populations on private land are often impacted by grazing animals. I suggest a conservation status of 3EC by the criteria of Briggs & Leigh (1996).

Etymology: From the Latin *tectus*, covered, concealed, hidden; in reference to the dense habitat where this species grows.

Other Specimen Examined: VICTORIA: Buckley, 6 Sept. 2004, *A.Pritchard (ORG 4511)* (CANB).

3. *Corysanthes heberlei* D.L.Jones, ***sp. nov.*** With affinity to *Corysanthes limpida* (D.L.Jones) D.L.Jones & M.A.Clem. but differing by its smaller flowers (8-12 x 9-12 mm in *Corysanthes heberlei cf.* 10-15 x 12-15 mm in *Corysanthes limpida* with labella flattened), smaller, spathulate dorsal sepal (9-11 x 4.5-5.5 mm in *Corysanthes heberlei cf.* 16-18 x 5-7 mm in *Corysanthes limpida*), nearly circular labellum lamina with a thicker more strongly developed smooth labellum boss that has a broad flat notch on the upper margin (inconspicuous thin-textured labellum boss in *Corysanthes limpida* with a corrugated surface), well-developed, short but sharply pointed teeth on the labellum margins (short, obscure blunt teeth in *Corysanthes limpida*) and a smaller column (2.5 x 2 mm in *Corysanthes heberlei cf.* 3.5 x 1.8 mm in *Corysanthes limpida*).

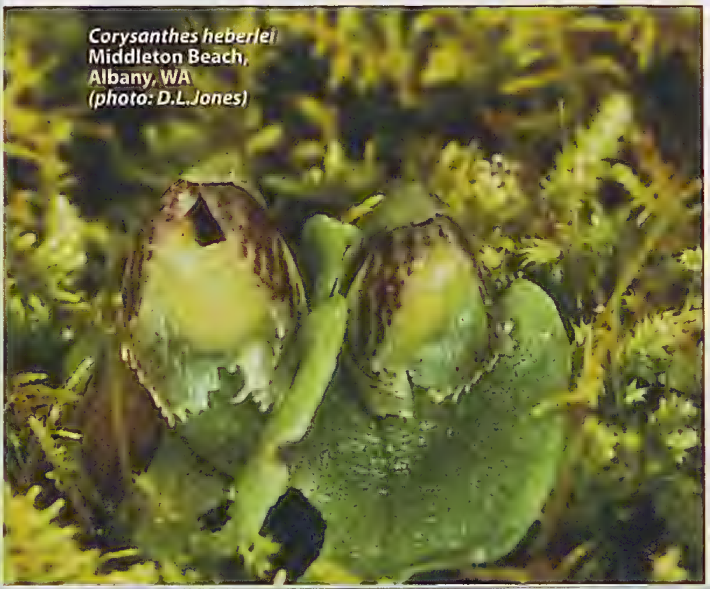
Type: Western Australia. Eyre District, Middleton Beach, Albany, 30 August 1986, *D.L.Jones 2435 & T.D.Jones* (holo CANB 679547, iso PERTH).

Description: *Leaf* cordate to orbicular, 20-30 mm long, 20-30 mm wide, pale green to bright green above with darker reticulate veins, silvery green beneath. *Flower* erect or slightly reclining, 8-12 mm long, 9-12 mm wide, translucent greenish, heavily mottled and blotched with dark reddish purple. *Dorsal sepal* spathulate, translucent green with red or purple mottles, 9-11 mm long, 4.5-5.5 mm wide, shallowly curved in sideview, incurved over the labellum tube and base of the lamina, apex broadly obtuse. *Lateral sepals* filiform, projecting forwards in front of the column base, 4-4.5 mm long, 0.1 mm wide, greenish, acuminate. *Petals* narrowly lanceolate, base auriculate, porrect below the lateral sepals, c. 3 mm long, c. 0.8 mm wide, pale, acuminate. *Labellum* longer than the dorsal sepal. *Labellum basal tube* 4.5-5.5 mm long, the base and auricles hidden in frontal view by the labellum lamina, abruptly decurved through c. 180° at the apex and greatly expanded into the lamina. *Callus* inside labellum tube consisting of crowded, flat, inward-sloping teeth. *Labellum lamina* elliptical to ovate in frontal view, nearly circular when flattened, 9-12 mm long, 9-12 mm wide, margins strongly incurved, dark red or purple with transparent whitish areas, outer margins with 9-12 pairs of short, relatively thick, bluntly pointed teeth, those towards the apical notch irregular in shape and length, appearing ragged. *Labellum boss* central, cream, thickened, the upper margin with a broad flat notch, the boss surrounded by a thinner translucent region mottled with red or purple, the surface smooth or with a few small papillae. *Auricles* directed downwards, with a prominent opening c. 1 mm across partly hidden by the base of the petals. *Column* c. 2.5 mm long, c. 2 mm wide, broadest at the base, minutely winged. *Stigma* c. 1.8 mm across, elliptical. *Anther* suberect, c. 1.5 mm long, obtuse. *Pollinarium* c. 1 mm long, c. 0.8 mm wide; pollinia four, linear-oblong, pale yellow, mealy; viscidium c. 0.5 mm long. *Capsules* not seen.

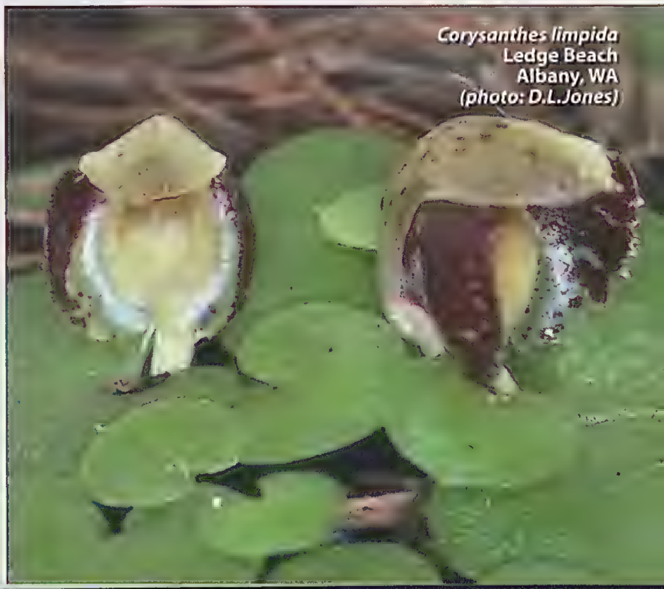
Distribution and habitat: Occurs in the Eyre District of south-western Western Australia where known from the type locality at Middleton Beach, Albany, and possibly also from Hamersley Inlet (bottom photo, page 174, Brown *et al.* (2013). It grows in pads of moss in dense coastal scrub on the sheltered slopes and swales of stabilised dunes in freely draining white sand. Altitude c. 5-30 m.

Flowering period: August and September.

Recognition: Helmet orchid with small, translucent greenish flowers heavily mottled and blotched with dark reddish purple, short translucent greenish spathulate dorsal sepal that covers the labellum tube and just reaches the base of the labellum lamina, circular labellum lamina with strongly incurved margins adorned with short, relatively thick, bluntly pointed teeth and thickened, cream labellum boss with a broad flat notch on the upper margin.



Corysanthes heberlei
Middleton Beach,
Albany, WA
(photo: D.L.Jones)



Corysanthes limpida
Ledge Beach
Albany, WA
(photo: D.L.Jones)

Similar species: *Corysanthes limpida* has larger flowers, longer and broader dorsal sepal that hoods the labellum, larger labellum with a smaller, thin-textured inconspicuous boss with a corrugated surface, incurved or spreading labellum margins with short blunt teeth and a longer, narrower column. It also has affinities with *Corysanthes despectans* and *Corysanthes intuta* (this paper) but both those species have a shorter narrower oblong dorsal sepal that barely reaches the base of the labellum lamina.

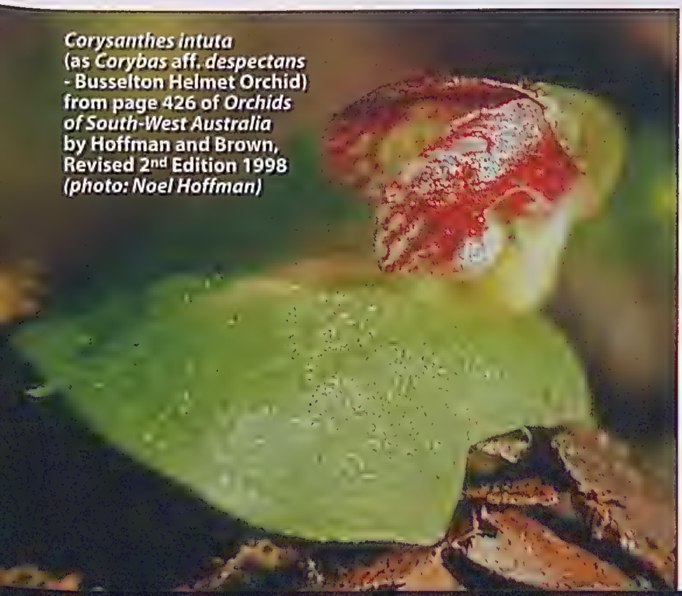
Notes: The flowers are self-pollinating with the pollinia fragmenting and falling onto the stigma as the anther becomes more upright with age.

Conservation Status: Known from one or two sites but probably more widespread and overlooked; suggest a conservation status of 2V by the criteria of Briggs & Leigh (1996).

Etymology: Named after Ronald Leslie Heberle (1913-2004), commercial fisherman, photographer and well-known West Australian orchid specialist who brought my attention to this species and many other orchids.

4. *Corysanthes intuta* D.L.Jones, ***sp. nov.*** With affinity to *Corysanthes despectans* (D.L.Jones & R.C.Nash) D.L.Jones & M.A.Clem. but differing by its even smaller flowers (7-9 mm long, 5-6 mm wide in *Corysanthes intuta cf.* 7-12 x 9-11 mm in *Corysanthes despectans*), shorter dorsal sepal (5-7 x 3.5-4 mm in *Corysanthes intuta cf.* 6-11 x 3-4 mm in *Corysanthes despectans*), very short labellum tube which is much shorter than the lamina (labellum tube and lamina of similar length in *Corysanthes despectans*) and smaller labellum (5-6 x 7-9 mm when flattened in *Corysanthes intuta cf.* 7-8 x 9-11 mm in *Corysanthes despectans*) and a relatively prominent thick white labellum boss with faint longitudinal ridges (inconspicuous almost triangular boss in *Corysanthes despectans*); also affinity with *Corysanthes heberlei* D.L.Jones (this paper) but differing by its smaller flowers (8-12 x 9-12 mm in *Corysanthes heberlei*) and smaller oblong dorsal sepal (spathulate dorsal sepal 9-11 x 4.5-5.5 mm in *Corysanthes heberlei*).

Type: Western Australia. Darling District, Busselton, ex Golf Course area, 2 September 1986, *D.L.Jones 2455 & T.D.Jones* (holo CANB 681137, iso AD, MEL, PERTH).



***Corysanthes intuta* (as *Corybas aff. despectans* - Busselton Helmet Orchid) from page 426 of *Orchids of South-West Australia* by Hoffman and Brown, Revised 2nd Edition 1998 (*photo: Noel Hoffman*)**

Illustration: Plate page 262, Hoffman *et al.* (2019) & Plate page 426, Hoffman & Brown (1998).

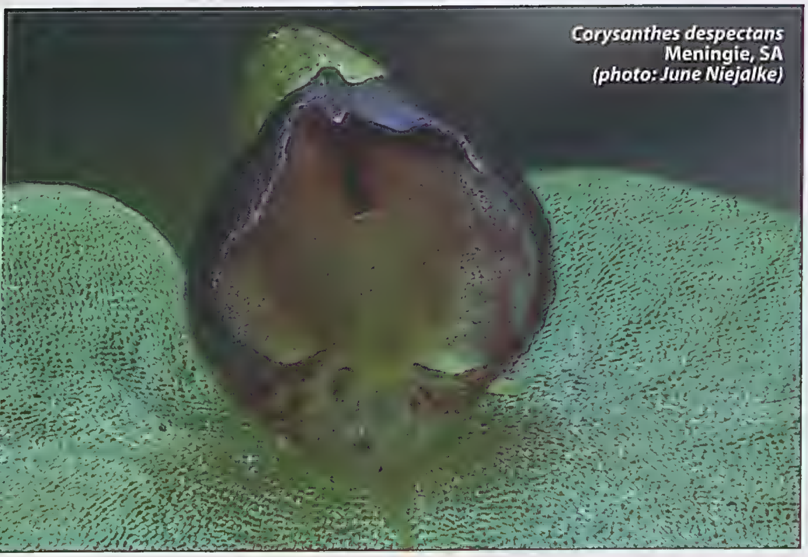
Description: *Leaf* ground-hugging, orbicular, 15-25 mm long, 15-25 mm wide, bright green above with inconspicuous immersed veins, silvery green beneath, margins entire, apex shortly mucronate. *Flower* slightly leaning forwards, 7-9 mm long, 5-6 mm wide, dorsal sepal bright green, labellum mostly heavily suffused with red to purple, some small pale translucent patches towards the outer margins. *Dorsal sepal* oblong, 5-7 mm long, 3.5-4 mm wide, mostly erect and straight in sideview, incurved in distal third, the bluntly pointed apex just reaching the base of the labellum lamina where it divides. *Lateral sepals* filiform, erect in front of the basal tube, c. 3 mm long, 0.4 mm wide, white, acute to acuminate. *Petals* filiform, base auriculate, erect in front of basal tube, c. 1.5 mm long, c. 0.3 mm wide, pale, subobtuse. *Labellum* much longer than the dorsal sepal. *Labellum basal tube* 3-3.5 mm long, the base and auricles hidden by the labellum lamina in frontal view, abruptly decurved through about 180° at the apex and greatly expanded into the lamina. *Callus* inside labellum tube consisting of short, flat, inward-sloping overlapping plates. *Labellum lamina* elliptical in frontal view, nearly circular when flattened, 5-6 mm long, 7-9 mm wide, margins strongly incurved, dark red or purple with transparent whitish areas, outer margins weakly scalloped and with very short denticulations (appearing entire), sometimes with a few irregular pairs of short triangular teeth, those towards the apical notch narrowly triangular and closely spaced. *Labellum boss* central, white, thickened, the surface with faint longitudinal ridges, upper margin a broad flat notch that appears square, the boss surrounded by a thin-textured mottled region, the surface smooth (no obvious papilla). *Auricles* directed downwards, with a prominent opening c. 0.5 mm across partly hidden by the base of the petals. *Column* c. 2.2 mm long, c. 1.8 mm wide, broadest at the base, minutely winged. *Stigma* c. 1.5 mm across, sunken. *Anther* c. 1.2 mm long. *Pollinarium* c. 0.8 mm long, c. 0.5 mm wide; pollinia four, linear-oblong, pale yellow, mealy; viscidium c. 0.3 mm long. *Capsules* not seen.

Distribution and habitat: Apparently restricted to the urban area around Busselton in south-western Western Australia where it grows in dense scrub dominated by a species of paperbarked *Melaleuca* in winter-wet depressions and swamps. Altitude: 0-20 m.

Flowering period: July to early September.

Recognition: Helmet orchid with very small flowers which have a very short green dorsal sepal and relatively prominent labellum which is heavily suffused with red to purple, the distal parts with small pale translucent patches and the strongly incurved outer margins shallowly scalloped and adorned with widely spaced short triangular teeth, sometimes these teeth much reduced and the margins appearing almost entire. The oblong dorsal sepal is so short that it barely reaches the division in the labellum lamina above the end of the labellum tube. The labellum lamina supports a thickened white labellum boss with faint longitudinal ridges and a broad flat notch on the upper margin.

Similar species: The new species has affinities with *Corysanthes despectans* which has larger flowers (7-12 x 9-11 mm), longer dorsal sepal (6-11 x 3-4 mm) which incurves and caps the base of the labellum, a longer labellum tube, larger labellum lamina (7-8 x 9-11 mm) and less conspicuous almost triangular labellum boss. *Corysanthes intuta* also has affinities with *Corysanthes heberlei* (described as new in this paper) but that species has larger flowers (8-12 x 9-12 mm) and a significantly larger spathulate dorsal sepal (9-11 x 4.5-5.5 mm) which is expanded distally and forms a cover over the base of the labellum and labellum tube.



Corysanthes despectans
Meningie, SA
(photo: June Niejalke)

Notes: The mealy pollinia fragment readily and the flowers are probably self-pollinating.

Conservation Status: This species may have once been more widespread and locally common around Busselton but its habitat has largely been drained and cleared for housing development. It is now known from a single relict roadside verge which suggests a conservation status of Critically Endangered (IUCN Red Book).

Etymology: The Latin *intutus* unguarded, defenceless, in reference to the species verging on extinction as a result of intense urbanisation.

Acknowledgements

I thank the late Ron and Pauline Heberle for hospitality in Western Australia and help with locating specimens in the field and Michael Duncan for photos of *Corysanthes tecta* and sharing information on its distribution and habitat. Thanks also to Gary Backhouse, Andrew Pritchard, Andrew Brown and Mark Clements for discussions, Lachlan Copeland for photographs, Marion Garratt and Karina Richards for technical help. Also Tim Jones for cheerful company in the field, Brendan Lepschi for access to specimens at CANB and Barbara Jones for checking the manuscript.

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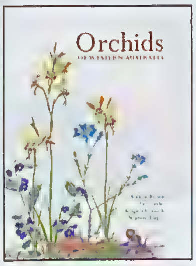

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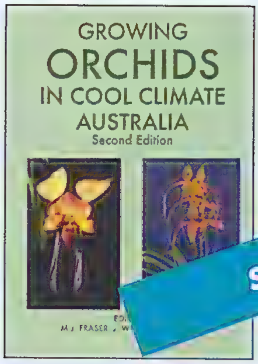

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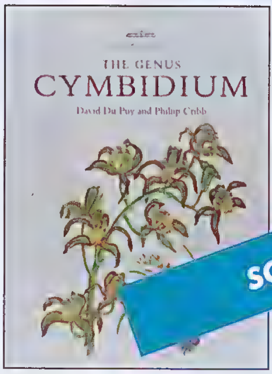

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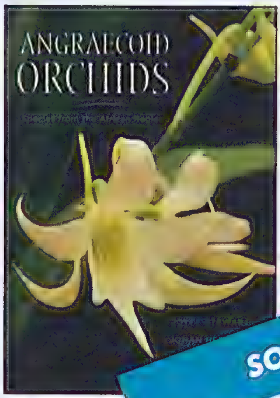

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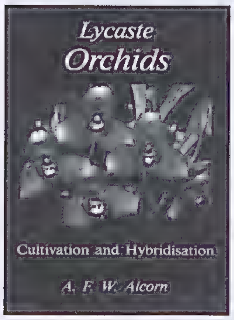

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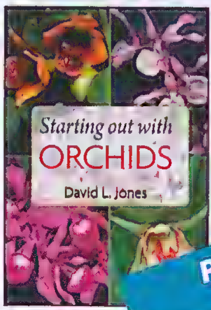

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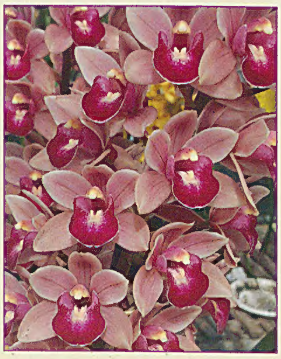

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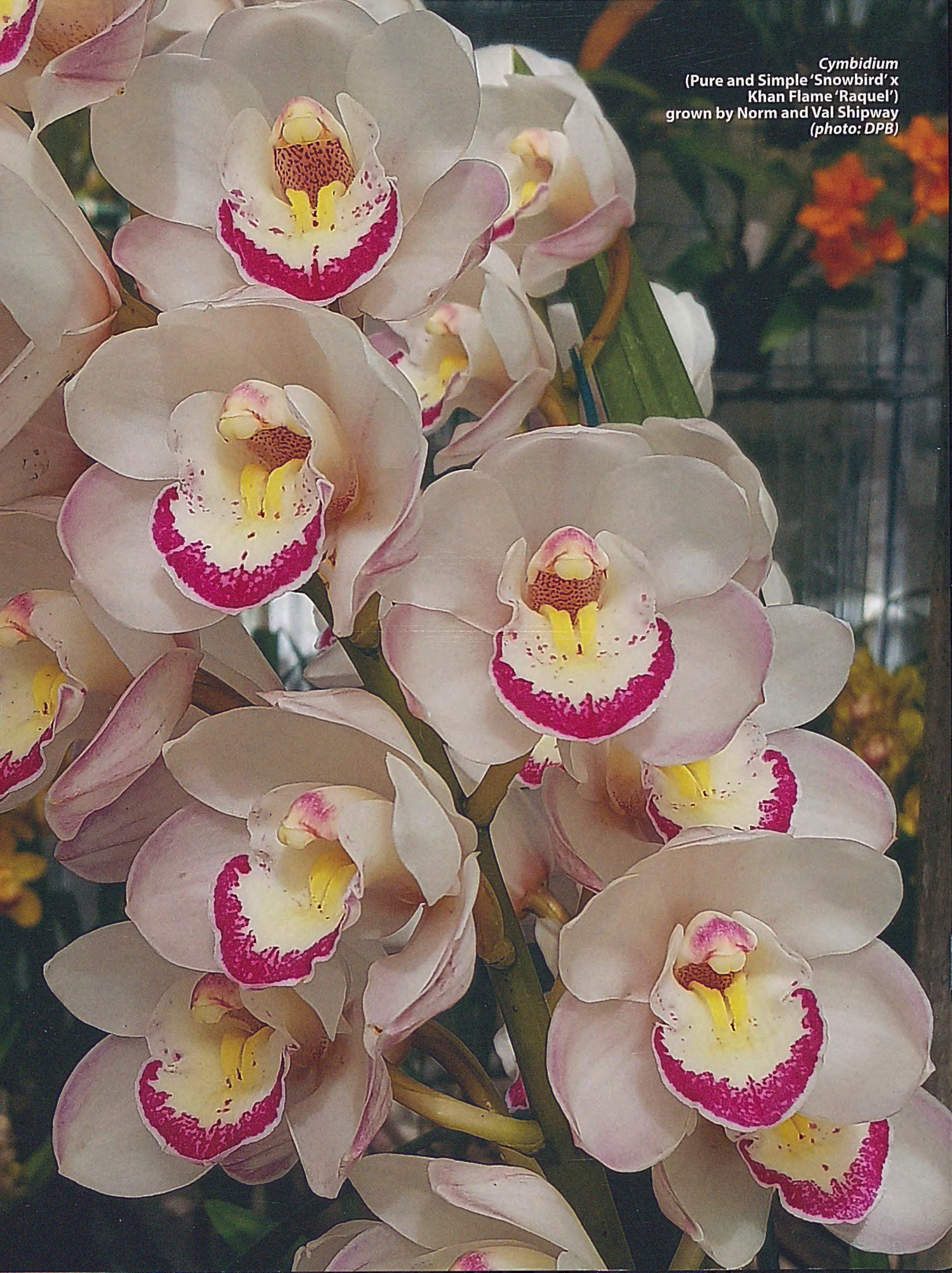

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